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THE UNIVERSITY OF ALBERTA

GENERAL EDUCATION IN POST-SECONDARY NON-UNIVERSITY

EDUCATIONAL INSTITUTIONS IN ALBERTA

by



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A THESIS

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UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "General Education in Post-Secondary Non-University Educational Institutions in Alberta," submitted by Desmond E. Berghofer in partial fulfilment of the requirements for the degree of Master of Education.



## ABSTRACT

The study sought to examine post-secondary, non-university education in Alberta to assess the extent to which a general educational background (as distinct from specific vocational and academic preparation) was being provided, and to consider such an educational provision in the light of problems likely to face Alberta society in the future.

Two research methods were employed. One procedure consisted of a survey (by questionnaire) of general education practices in thirteen post-secondary, non-university educational institutions in Alberta. The findings from this survey indicate that there is considerable lack of agreement among the institutions contacted on what is meant by general education. It appears that this type of education is provided largely in informal ways. Formal instruction is concerned mainly with academic and vocational courses, and any contribution that such courses make to general education seems to be of secondary importance. With one exception the institutions have done little in the way of providing specially devised courses for general education. However, all of the institutions expressed interest in extending their provisions for general education.

A second research procedure employed in the study used a long-range forecasting methodology, known as the Delphi technique, to identify problems relevant to general education which are likely to face Alberta society during the next thirty years. The method was designed to solicit opinion from sixty-one respondents selected for their recognized expertise in areas related to the individual and social



pursuits of man. In four sequential questionnaires the participants were asked to (1) identify future societal problems, (2) estimate the probable date by which each problem would be clearly recognized by a majority of people affected by it, (3) provide reasons for their expressed opinions, and (4) revise their original estimates in the light of the reasons supplied by other panel members.

The findings from the Delphi study indicate that there are many societal problems, present and future, which are a legitimate concern of post-secondary general education in Alberta. Implicit in many of the forecasts made are potential dangers to Alberta society which call for preventative action. Among these dangers are: increasing abuse of the natural environment, social upheaval resulting in part from greater urbanization and increased leisure, manipulation of the individual as a number rather than a person, intensified economic inequality, and the possible accumulation of political power in the hands of a rotating political-industrial elite.

The most important recommendations growing out of the study are:

- (1) that individual institutions set up appropriate committees to examine the concept of general education and prepare policy concerning it; (2) that such policy be future oriented and concentrate on the role that general education can play in assuring a decent quality of life in the face of undesirable alternatives; (3) that serious consideration be given to establishing a permanent educational planning commission, which either alone or in collaboration with similar agencies from government and industry will be concerned with monitoring the future and drawing attention to alternatives open to society in determining its future.



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## Chapter 1

### INTRODUCTION

### ORIENTATION

During the next thirty years, civilization will face problems of unprecedented complexity. Emery (1967:222-23) describes the present period as an age of turbulence in which unplanned consequences result from actions of the component systems. Michael (1968:14-36) looks at the future in terms of complexity, turmoil, and scarcity. Kahn and Wiener (1967:7-8) have identified thirteen basic trends of Western society as part of a common, complex trend of interacting elements. According to these and other writers the years ahead will be difficult as problems arise from the convergence of social and technological developments on a scale of complexity hitherto unknown in human experience.

The realization that such problems can develop has lead in recent years to an upsurge of interest in long-range planning, coupled with the notion that the future of the individual and society has come in large measure within human control. In this regard the idea has arisen that the future is what man determines it to be, and forecasting studies are carried out with the intention of identifying potential trouble spots so that action can be taken in the present to make a preferred future more likely. No claims are made that the future can be predicted with certainty, but, as Helmer (1966:36) points out, such studies can reveal general trends and "provide warning signals of potential dangers to our society that might be avoidable through judicious social-engineering work."



If the capacity to effect desirable change is recognized as a more attractive alternative to passively accepting the "inevitable", the question arises as to what action can be taken by existing social institutions to ensure some measure of control over the future of society. This question is particularly relevant to the field of education, since by their nature educational institutions must be concerned with problems and issues pertinent to the needs of the students and the society which they serve. If the future of that society is threatened, then educational institutions must be prepared to play an active role in modifying the social environment "to help men better to pursue the ends they desire and not be left to adapt passively to whatever blindly emerges." (Emery, 1967:200).

However, educational institutions have traditionally been largely concerned with transmitting the cultural heritage. According to Michael (1968:116) "the teacher's task was chiefly to conserve the past, to present it to the next generation in order that the past would be present in the future behaviour, attitudes, styles of the next generation of adults." Such an approach made sense when the future was expected to be--indeed, was intended to be--like the present. However, since current trends indicate that the future will be not only different from the past but also potentially more troubled and precarious, educational institutions today are faced with the problem of deciding what procedures they will adopt to prepare citizens better able to cope with the future and perhaps sufficiently enlightened to choose more desirable alternatives.



### STATEMENT OF THE PROBLEM

With respect to the basic educational problem mentioned above, this study sought to examine education in Alberta at the post-secondary level to assess the extent to which a general educational background (as distinct from specific vocational and academic preparation) was being provided, and to consider such an educational provision in the light of problems likely to face Alberta society during the next thirty years. As a further delimitation the study concentrated on post-secondary, non-university institutions. These were selected because of their rapid development in Alberta during the past decade, and because since many are relatively new, they have a unique opportunity to develop their orientation to the future without the encumbrances of tradition or inherited interest groups.

More specifically, the objectives of the study were as follows:

1. To survey general education practices in post-secondary, non-university educational institutions in Alberta
2. To identify the major problems facing Alberta society during the next thirty years, the implications of which could constitute the basis of general education curricula in Alberta's post-secondary, non-university educational institutions
3. To establish probable dates by which the problems identified in (2) might reach serious proportions if no corrective measures are taken
4. To examine the effectiveness of a method known as the Delphi technique in forecasting problems relevant to general education.



## IMPORTANCE OF THE STUDY

The above objectives constitute a unique approach to the study of general education. To the best of the writer's knowledge no other study in Canada or elsewhere has linked general education with the concept of alternative futures or used the Delphi forecasting methodology to predict future societal problems relevant to general education. In an era of turbulence and uncertainty about what lies ahead the study therefore assumes a special significance as one attempt to examine the possible role of education in planning a future which will ultimately become a desirable present.

In addition to this important future orientation, the study also employs a methodology which is particularly significant to the field of education. The Delphi technique offers a means of utilizing expert opinion from a cross-section of educators, psychologists, sociologists, and leaders in community, government, and business circles. To tap such a pool of expertise by the traditional approach of setting up a conference with group discussions would be both expensive for the organizers and inconvenient for the participants. This study, by demonstrating an alternative approach to obtaining interaction between knowledgeable people, provides a practical example of a valuable tool for educational planning.

Moreover, the concentration on planning for general education in non-university institutions is also particularly significant. According to the 1969 Annual Report (Part One) of the Alberta Department of Education post-secondary, non-university institutions are assuming an increasing importance with respect to the number of students attending. Two items from the report are especially noteworthy:



1. The Board of Post-Secondary Education (now replaced by the Alberta Colleges Commission) in 1969 approved new campuses for Medicine Hat Public College and Mount Royal College in Calgary, and recommended that a college be established in Edmonton as soon as possible.

2. Enrolment at the Northern Alberta Institute of Technology increased from 3958 in 1965 to 7724 in 1969, and during the same period enrolment at the Southern Alberta Institute of Technology increased from 3426 to 5791.

This trend toward higher enrolment and expanding facilities at non-university institutions will likely be further emphasized as greater acceptance is given to the concept of "democratization of education" described by Medsker (1960:21), which would make it possible for students to enter some type of post-secondary institution when their academic background might not permit them entrance to university because of their inability to meet admission standards. In a technologically-oriented society such post-secondary educational institutions will inevitably be under considerable pressure to provide occupational courses. This study, by drawing attention to the general education component of post-secondary education, could prove of value in reducing the emphasis on purely vocational education, and in assuring that the "living time", present and future, of students is recognized as well as their "working time."

#### DEFINITIONS OF TERMS USED

##### General Education

There are many definitions of general education. In this study it is behaviourally defined as that education which prepares an



individual to live more fully as a person and more effectively as a citizen.

#### Post-Secondary, Non-University Educational Institution

A post-secondary, non-university educational institution is defined as any educational institution in the province of Alberta which is not a university and which is not primarily concerned with teaching the formal elementary or secondary curricula of the province. Its students will usually fall into one or more of the following categories: those pursuing a full-time transfer program with the ultimate intention of transferring their credits to a university or "higher" institution; those following a full-time terminal program at the conclusion of which they will presumably proceed to the labour force; those taking part-time transfer, terminal, or non-credit courses.

#### ASSUMPTIONS

The study was based on the following assumptions:

1. There are persons knowledgeable in their areas of interest who are able to identify developing and future problems in those areas and who when asked to do so will perform this task responsibly.
2. Such knowledgeables can be recognized on the basis of their reputations.
3. The persons chosen as respondents in the Delphi study were knowledgeable as described in (1) and (2) above.



## DELIMITATIONS

The study was delimited in the following ways:

1. The post-secondary, non-university educational institutions contacted for the general education survey were those mentioned by Campbell (1969:13-14) as eventually comprising a system of community colleges throughout the province. They were: The five Alberta public colleges at Medicine Hat, Lethbridge, Calgary, Red Deer, and Grande Prairie; the two institutes of technology at Edmonton and Calgary; and the three agricultural and vocational colleges at Olds, Vermilion, and Fairview. In addition three private church-related colleges were contacted: Camrose Lutheran College at Camrose, Concordia Lutheran College at Edmonton, and Collège Saint-Jean at Edmonton.

2. Respondents selected to participate in the Delphi study were resident in Alberta and were asked to address themselves to the Alberta situation.

3. The study was not concerned with formulating precise general education curricula for post-secondary, non-university educational institutions.

## LIMITATIONS

The study was subject to the following limitations:

1. The effectiveness of the study in identifying future problems was limited by the knowledge and foresight of the population selected.

2. The effectiveness of the respondents in making judgments about identified problems was limited by personal variables beyond the control of the researcher and by limitations of the technique employed.



## ORGANIZATION OF THE THESIS

The thesis has been organized in four chapters following the introduction.

A review of significant related literature is found in Chapter 2. This review is arranged in two parts: literature related to general education, and literature related to planning the future.

Chapter 3 describes the two research procedures used in the study: (1) a general education survey, and (2) a Delphi study of problems relevant to general education and likely to face Alberta society during the next thirty years. The latter description includes details concerning the selection of the population, an account of the various steps in the procedure, and information about the techniques employed in treating the data.

Chapter 4 is devoted to the analysis of the data obtained from the research procedures described in Chapter 3.

The concluding chapter presents a concise summary of the study, assesses the effectiveness of the methodological technique, draws some conclusions, suggests several implications of the study, and lists possible topics for further research.

Several appendices are included to provide additional information relevant to various aspects of the study.



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## Chapter 2

### RELATED LITERATURE

The study sought to examine the concept of post-secondary general education in the context of the likely future of Alberta society during the next thirty years. The purpose of this chapter is to set the background for the study by reviewing the literature related to general education and the literature dealing with some theoretical and methodological approaches to planning the future.

### GENERAL EDUCATION

#### The Meaning of General Education

A continually recurring theme in much of the literature on general education is the lack of agreement which exists among educators as to what is meant by this kind of educational offering. According to Medsker (1960:56), the term is used by some writers to refer to a common basic curriculum, and by others to mean common outcomes of a fundamental educational experience. To yet another group it might mean "an understanding of the major concepts, principles, and methodologies of major fields of knowledge (as opposed to the content of narrower disciplines)."

In this study the term is behaviourally defined, as further suggested by Medsker (1960:56-57), to mean that education which prepares an individual to live more fully as a person and more effectively as a citizen. This definition is enlarged by Thornton (1966:198) who states

. . . that it is called "general" because its purposes are conceived to be common to all men; it is that part of the total



collegiate offering which is concerned with men's likenesses rather than with their divergent interests.

An even more explicit definition is provided by Johnson (1952:21-22) in a list of twelve goals of general education relating to students' experiences, needs, capacities, aspirations, and interests. Since these goals constitute clear and realistic objectives of general education, they are presented in full in Appendix G of this report, where it is hoped they will serve as a useful reference for purposes of clarifying general education objectives.

Undoubtedly, part of the difficulty in establishing a clear understanding of what is meant by general education derives from its confusion with "liberal" education. Morse (1964:7-12) examines this problem and draws the following distinction: Liberal education is concerned with the logical consideration of the whole of Western culture, is divorced from pragmatic intent, and is primarily concerned with the intellectual development of the student; general education, on the other hand, is basically pragmatic and directed towards the needs of the student and his development on a broader scale--intellectual, emotional, personal, and social.

The above distinction implies that liberal education entails study of a more specialized order than is expected in general education. This draws attention to the most salient feature of general education: its concern with breadth of study rather than depth. As Williams (1968:215) has said, general studies differ from specialist studies in that the latter liberate the student from prejudice and ignorance in his own field, while the former put the student on the road to freedom from prejudice and ignorance in all other fields.



Specialist studies in the above sense refer to all forms of specialization whether they be in the arts, sciences, or technologies; and it is precisely because the demand for such specialization is so great in the present age that generalists in education find it difficult to obtain strong support for general studies at the post-secondary level. The central problem in this regard, according to the authors of General Education in a Free Society (1945), is how to save general education in a system where specialism is necessary.

Perhaps part of the solution to this problem lies in the paradox of specialization referred to by Brumbaugh and Pace (1952:283). These writers assert that while vast new knowledge and technology have resulted largely from specialized study and research, the problems thereby created are broad and inclusive human problems, which are not likely to be solved by more of the same kind of specialization and research. The same idea is echoed by Thornton (1956:121) when he refers to the freeing of men's time from labour as another consequence of technological development which has underscored the need for an education broader than vocational.

#### Canadian Opinion on General Education

All of the above references to the meaning of and need for general education are from American sources. Concerning Canadian opinion on this subject, Williams (1968:106-108) states that there is a strong tendency for Canadian post-secondary institutions to look to the highly specialized approach adopted in Britain rather than to the broader types of curricula common in the United States. However, he suggests that both Canadian and British opinion are moving in the direction of American thinking on this subject.

Evidence of this trend is provided by Watson (Williams, 1968:106)



and Marsh (1966:72-73), both of whom point out the dangers of excessive insistence on specialization. Watson, in particular, emphasizes the need for a change of approach:

The level of general knowledge and culture in the products of our high schools satisfies nobody as adequate for a university undergraduate, still less a university graduate. . . . And surely one cannot rely on the home or the community to enrich adequately the cultural background of many, if not most of our students! Students of science and technology may well be intent on their chosen field and impatient of any other studies, but are they mature enough to decide for themselves in their first years? As for "catching up with the Russians," surely the greater danger is that in our fears we may abandon the very values which made the survival of the West a universal human interest.

#### The Philosophical Foundations of General Education

Much of the lack of agreement concerning the aims of general education and its proper place in the over-all offerings of an institution, stems from basic differences in philosophical viewpoint. As Taylor (1952:26) points out, it is only by appeal to some set of philosophical principles that decisions can reasonably be made with respect to the establishment and development of general education. This study, for example, associates general education with personal development and effective citizenship and emphasizes the need for such programs to be both problem and future oriented. Another approach, based on a different philosophical outlook, might well place the point of emphasis in general education on the study of the classics. It follows, therefore, that in order to obtain a balanced understanding of general education, it is necessary to have some knowledge of the differing philosophies that undergird it.

Writing on the American scene, Taylor has identified three divisions of thought concerning general education: the philosophy of rationalism; the philosophy of neo-humanism or eclecticism; and the



philosophy of naturalism or, more specifically, instrumentalism. As these three philosophies lead to essentially different approaches, their main characteristics are reviewed here.

The rationalists' approach to general education, according to Taylor, is to require a serious study of the past. "It is a philosophy of education designed to preserve Western tradition and to gain unity by setting down a standard pattern of principles." (Taylor, 1952:29). The function of general education, from this point of view, is to bring to the contemporary student the great thinkers of the classical tradition, who have discovered the unity that exists in nature.

The neo-humanist approach described by Taylor (1952:30-35) is similar to the rationalist in that a dualism between mind and body is recognized, and proper subjects for the training of the mind are prescribed; but there is no specific philosophical system which supports the recommended program. The approach is essentially eclectic. It is best illustrated by the Harvard Report, General Education in a Free Society, which asserts that "the true task of education is . . . so to reconcile the sense of pattern and direction deriving from heritage with the sense of experiment and innovation deriving from science that they may exist fruitfully together. . . ." (General Education in a Free Society, 1945:50). Taylor criticizes both the neo-humanist and rationalist viewpoints in that their effect on the development of higher education will be to make it more formal, more structured, and more academic.

The instrumentalist philosophy of education (Taylor, 1952:35-38) is the point of view to which Taylor himself subscribes. He states that it puts its chief emphasis on the uses of knowledge, and its "theory of truth works outward from individual experience to concepts and facts



which are continuously reaffirmed or denied by subsequent experience."

This kind of general education places emphasis on the individual student, and tries to arrange the educational environment to make it possible for him to find his own way toward full development. According to MacLean and Raushenbush (1952:173), it rejects the idea of intellectual disciplines as the only approach to learning, and assumes that the emotional, psychological, social, and cultural aspects of student life are important considerations to be borne in mind in planning programs of general education. Morse (1952:346) asserts that the whole community-college development is moving in this direction.

On the basis of Taylor's classification, the present study is undoubtedly instrumentalist in spirit in that it is concerned with society's need for individuals trained for common understanding and enlightened behaviour. However, by considering this need in the context of alternative futures for society, the study is adding an extra dimension to the instrumentalist approach. In the opinion of the writer, such an addition is necessitated by the justifiably grave concern now prevalent regarding the future of man and his civilization.

#### Meeting General Education Objectives

Having reviewed the literature relating to the meaning and philosophical foundations of general education, it is now appropriate to consider what has been done in the past to meet the objectives of such education. Medsker (1960:58) states that educational institutions attempt to meet these objectives either through conventional courses (usually introductory departmental courses) or through courses devised specially for general education. Commenting on the first of these two



approaches, Thornton (1966:198) points out that though it has certain economic advantages--in that a single course may be made to serve several purposes--the courses are planned principally for those who will study further in the field, and the purposes of other students are likely to be subordinated or completely ignored. A similar criticism of this approach is levelled by Johnson (1952:43). In the light of these criticisms, it is interesting to note that Medsker (1960:59) found that 77 percent of 243 two-year colleges included in a study which he conducted, relied primarily on conventional or departmental courses to meet their responsibilities for general education.

Medsker's finding indicates that little had been done by the institutions surveyed to develop special courses for general education. With respect to devising such courses, Thornton (1956:121) identifies two procedures: (1) the survey-course approach, in which the institution develops and requires broad courses which cut across departmental lines; and (2) the functional-course approach, in which courses are designed relating to the activities of people in a given society and the characteristics of students in a given college. In the latter approach traditional titles are abandoned, and materials are drawn from any discipline which contributes to the growth of the students toward the course objectives. Medsker (1960:59) found that only 30 percent of the colleges included in the study mentioned above indicated that they had established courses specially designed for general education.

Post-secondary institutions may be slow to develop specific general education courses, but many writers strongly urge the adoption of this approach. Carlin (1964:64) states that the need for general education in the face of more but unpredictable types of specialization



will become greater than in the past. He looks forward to a world civilization and emphasizes the importance of mathematics to that civilization. Reed (1964:52), too, sees an urgent need for a global outlook and advocates the development of intercultural non-Western studies. Courses more closely related to contemporary life are stressed by French (1968:95), who also insists that general education curricula be torn up and thrown away every five years. Both French and Weigman (1969) urge experimentation in new ways of teaching and a total institutional involvement in the educational process. Blackman (1964:75) stresses the need for special courses, but warns against the very real possibility of superficial treatment by failing to deal with fundamental principles and methodology.

Institutions which seek to promote the kind of general education implied by the above writers can expect to face numerous administrative problems, and undoubtedly this is one reason why many colleges are less than enthusiastic about a firm commitment to general education. With regard to such administrative difficulties, Brumbaugh and Pace (1952:279) have enumerated three major categories: (1) the problems of clarifying function and purpose; (2) the problems involved in finding an organizational framework which satisfactorily relates the structure of the general education program to the total structure of the institution; and (3) the problems associated with the process of change.

In addition to these general administrative problems there are other more specific deterrents to the establishment of effective general education programs. With respect to public junior colleges, Thornton (1956:126-28) has identified several of these deterrents. One problem he refers to is that vocationally-oriented students are more likely to



"drop-out" if a high proportion of general education courses is required. A second problem related to vocational education is that the demands of such curricula make severe inroads on time for general education. Other deterrents are diversity of student background, restrictions imposed by four-year colleges for transfer students, faculty inertia, and lack of funds.

Yet another difficulty associated with general education is the question of evaluation. On this subject Harris (1969:74) states that there is no body of research "which conclusively shows that a given increment of general or liberal education results in a concomitant and quantifiable increment of good to society." He suggests that research in this area is badly needed. Blackman (1964:77) claims that attempts made to assess the effect which general education has had on graduating students and alumni have generally yielded disappointing results. He goes on to say:

. . . Yet I have never met a teacher in general education who was not convinced that his students did in fact change. I believe we do not know how to measure the complex and subtle ways in which one becomes a somewhat different human being as a result of having taken this or that course. . . . While we must explore the significance of all available quantitative data, evaluation of general education is ultimately subjective. But it is not chaotic. It depends on the experience, sensitivity, perceptiveness, intelligence, general education, and--finally--intuitive insights of the evaluator.

In view of the difficulties apparent in much of what has been reviewed in this section, it is perhaps not surprising to observe that Medsker (1960:62), at the end of his study, came to the conclusion that "junior colleges have made relatively little progress in developing well-organized curricula for general education." Similar conclusions had been reached earlier by Johnson (1952:49) and Reynolds (1946:308). In a further comment Medsker points out, however, that while the over-all



situation left much to be desired, some individual institutions had achieved noteworthy accomplishments in general education--a fact which indicates that despite the difficulties much can be achieved where true commitment to the spirit of general education is to be found.

### General Education and the Community College

Since this study was primarily concerned with non-university, post-secondary institutions, it is appropriate to include in the survey of literature the opinions of various writers on the possibilities which exist for providing general education at this level. Community and junior colleges, in particular, are seen by several writers as institutions in a uniquely favourable position to experiment with general education. Thornton (1956:128-29) states that many are "newly established institutions, free from accumulated tradition, vested faculty interests, and alumni pressures." They can "select faculty and design their offerings from the outset in complete harmony with their educational philosophy." A similar opinion is expressed by Marsh (1966:43), who also sees the comparatively small size as an advantage. Thornton feels that community colleges are in a good position to emphasize instruction and to promote faculty on the basis of their teaching ability. Both Marsh and Thornton refer to the college as having a mandate from the community. It is part of the community and can draw upon local resources to illuminate and vitalize classroom instruction, which is so important to a system of general education.

One of the deterrents to general education programs referred to by Thornton and reviewed in the previous section, is the fact that restrictions are often imposed on community and junior colleges by four-year institutions with respect to transfer students. Weigman (1969:9)



states that junior colleges should aim to free themselves from this kind of outside control. Reporting on the Canadian situation, Fisher (1967:56) states that in Alberta transfer courses are identical to the equivalent courses at the universities. However, he reports that in British Columbia the universities will accept for transfer credit several courses for which they have no direct prototype.

#### General Education in Alberta

As far as the Alberta scene is concerned, it would appear from the foregoing remarks that the greatest potential for the development of general education at the post-secondary level lies in the community-college movement. An underlying philosophy for such a system has been discussed by Fast (1968:4), who distinguishes between what he calls the realist and rationalist philosophies of higher education. He states that the realist philosophy would hold that institutions should be training oriented, whereas the rationalist point of view would place greater value on developing within the students a broader concept of the world in which they live. For Alberta Fast advocates an eclectic approach, and recommends that institutions be established on two premises: "first they will provide students with some vocational training programs; and second, that they will go beyond the training stage to educate students according to their interest and abilities." Presumably, the latter premise refers to the provision of some measure of general education.

Since one of the aims of this study was to ascertain the current situation with respect to general education in several of Alberta's colleges and institutes of technology, a questionnaire was prepared and forwarded to the president or principal of each. The findings from this survey constitute an important addition to the literature on general



education in Alberta in that they reveal the present opinion concerning the nature of and need for this kind of educational provision in several fundamentally different types of institutions. These findings are reported in Chapter 4.

### PLANNING THE FUTURE

The review turns now to literature pertaining to the future and examines the subject from both a conceptual and methodological point of view. In doing so the intention is not to provide an exhaustive treatment, but rather to present only those aspects which seem necessary to help understand the central problem of the study.

#### The Sense of the Future

A sense of the future has always held a high degree of importance in man's view of himself and his world. As McHale (1969:3) points out;

The future is an integral aspect of the human condition. Man survives, uniquely, by his capacity to act in the present on the basis of past experience considered in terms of future consequences. By assuming a future, man makes his present endurable and his past meaningful. Past, presents, and their alternative futures interweave in the anticipation and prediction of his future actions.

The centrality of the future in human affairs is attested by historical evidence of various social roles and institutions concerned with the prediction and possible control of future events. McHale states that these range

. . . through the oracular clairvoyance of the shaman, the medium, and fortune-teller for the interpretation of individual futures, to the larger social function of the priest king, the prophet, or political leader, to the more explicit professionalism of today's planners, forecasters, and long-range strategists.

The development of the last mentioned approach to the future was possible only because of a relatively unique Western point of view.



This way of looking at tomorrow, according to McHale (1969:4), "embodies within it the idea of progress--both material, in terms of the improvement of human welfare in the present or near future, and metaphysical, in terms of the perfectibility of man and his society. . . ." In the present period this view has led to the idea that the future of the individual and of human society are within human control.

### Futurism

Associated with the notion that man can in large measure control his future has come an activity which Michael (1968) calls "futurism" and which Madden (Michael, 1968:vii) describes as one of the striking phenomena of the times. Those who engage in this work are using intellectual and scientific techniques to both anticipate and prepare for social and technological developments years or decades before they occur.

In describing the techniques employed by these "futurists", Bell (Kahn and Wiener, 1967:xxiv) states that there is "a growing sophistication about methodology and an effort to define the boundaries--intersections and interactions--of social systems that come into contact with each other." According to Madden (Michael, 1968:xi) the new futurists are more cautious than were those men who engaged in earlier efforts at scientific forecasting:

One of their marks is their tendency to talk about a multitude of possible futures and to avoid talk of the future. If certain things are done or not done, future "x" rather than future "y" will be more likely to result. But the conditions that might lead to "y" must be studied too, if we are to understand the choices and possible futures before us.

### Long-Range Planning

From the above it can be seen that the futurists emphasize that



an element of choice exists with respect to coming events. They deliberately make their prophecies self-fulfilling and elaborate them with a detail that makes possible performing the acts that will help bring them about.

In this way the futurists are exemplifying a new concept of long-range planning--a concept which, according to Michael (1968:68) holds that planning entails more than

. . . simply drawing up sets of diagrams and recommendations for what a particular situation should be like five or twenty years from now. . . . it also involves planning and vigorous participation in the development and use of the means for attaining the recommended ends.

In this regard Emery (1967:200) argues that the social sciences have an active role to play in the years ahead. They can seek to modify the social environment in order to help men pursue their desired ends rather than be left to adapt passively to whatever develops. Jantsch (1969:186) describes this as "integrative planning"--planning in terms of the quality of life.

The Organization for Economic Co-operation and Development held a symposium on long-range planning and forecasting at Bellagio, Italy in 1968. At the conclusion of the conference the members issued a joint declaration (The Bellagio Declaration on Planning, 1969:182-84). In this declaration they refer to the deteriorating quality of individual and community life, and go on to say:

The need for planning is not generally recognized. Further, the pursuance of orthodox planning is quite insufficient, in that it seldom does more than touch a system through changes of the variables. . . . Mere modification of policies already proved to be inadequate will not result in what is right. Science in planning today is too often used to make situations which are inherently bad, more efficiently bad.

The Bellagio Declaration concludes by expressing the belief



"that a basis of remedy already exists to help man to define and create his own future." Michael (1968:91) is less optimistic. While he agrees that long-range planning is essential, he also believes that

. . . we are almost certain to face disaster if we don't plan; we are almost certain to increase the likelihood of having a better world if we plan well. But we are almost certain to be in deep trouble even with planning because our best plans will be developed and fostered by limited human beings picking and choosing among limited knowledge, very often ignorant of the extent of their own ignorance.

#### Conceptual Bases for Predicting the Future

If planning is to be carried out in a context of expected social developments for several decades ahead, some basis must be established for making predictions with respect to those future developments. This entails the construction of an appropriate conceptual framework; and one of the most detailed examinations of this aspect of the future is found in the work of Emery (1967:202-206).

Emery replies to sceptics who argue that the future cannot be known because it has not been experienced by asserting that though

. . . we cannot experience that which does not exist we are still prepared to agree that we know something scientifically if we know we could, given present conditions, create the relevant experiences (by experiment, test or observation). This copes not only with why we believe that we know something of the past, but also with why we believe we know something about the future, e.g. we can experimentally demonstrate that exposure to present conditions will lead to a particular set of events at some point in the future. At a trivial level we can say that, given the numbers sun-bathing today, there will be many more with sun burn tomorrow.

With respect to the way that past and present events are causally related to and predictive of future events, Emery argues that there are laws corresponding to the whole course of a living process and that certain (not all) of the characteristics of events arising within a process can be predicted by the laws governing that process. Thus, the



prerequisite for prediction is a knowledge of the developmental laws. In addition it is necessary to have some knowledge of earlier facts in order to know how the laws are operating in a specific individual process, and hence to know the effects they will have on later phases.

In Emery's view the general principle involved in predicting the future of concrete individual processes (such as the United Kingdom or John Smith) is "that for any system there is a minimum number of its component positions that have to be filled by parts before the system is recognizable." From this point of view the more of its course a system has run, the more likely it is that a reasonably accurate prediction can be made concerning it.

The above outline of Emery's approach, though by no means a complete treatment of the conceptual aspects of futures research, does serve to refute assertions of scepticism concerning this activity and establishes that there are genuine theoretical questions involved in predicting the future.

### Methodology

Despite the importance of theoretical considerations, it seems unlikely that futures research can avoid a considerable reliance on intuitive judgment, especially when "distant" projections and choosing between alternatives are involved. This raises the methodological problem of how to utilize such judgment most effectively.

On this matter Helmer (1966:4-6) has argued the necessity for the social sciences to explore the possibilities that the operations-research approach has to offer. He states that operations research was developed in the area of applied physical sciences under conditions of duress



brought about by military conflict in World War II. Similarly, the social sciences are presently operating in a period when society faces great danger, and he therefore urges a reorientation of some of the effort in the social-science area towards social technology, which would entail employing operations-research techniques. He discusses the methodological implications of such a reorientation under the headings of "operational model-building" and "systematic use of expertise."

Referring to the first of these two categories, Helmer (1966: 6-10) states that the purpose of constructing a model is to make explicit certain functional relationships among elements of a problem, and to formulate hypotheses regarding the nature of these relationships. He mentions in particular the "simulation model", examples of which are mathematical models, physical simulation models, and operational gaming.

Also included in Helmer's description is an activity closely related to operational model-building and known as scenario-writing. It involves a constructive use of the imagination by depicting step by step how a future state might evolve in a plausible fashion out of the present one.

While Helmer (1966:11-17) regards model-building as a systematic expedient to promote understanding of the environment, he sees the use of expert judgment as more than an expedient: it is an absolute necessity. He claims that much potential expertise remains untapped in practical policy considerations, and discusses methods that may be employed to put this potential to use. The discussion includes selecting experts, aiding the performance of an expert, and utilizing groups of experts.

With respect to the last of these, Helmer distinguishes between two cases: (1) asking experts with separate specialties to comment on



distinct aspects of a problem; and (2) soliciting the opinions of several experts on the same question or questions. He suggests that the former may well require the use of simulation models such as operational gaming (including the possibility of computer models); the latter is possibly best achieved by use of the so-called Delphi technique.

### The Delphi Technique

As the Delphi technique was the operational method employed in this study, further reference is made to it here. The technique was originally developed by Dalkey and Helmer (1963) as an alternative to traditional round-table discussion by experts. Perhaps the most concise description of it has been given by Helmer and Rescher writing "On the Epistemology of the Inexact Sciences." (Helmer and Rescher, 1959:47). They state that the Delphi technique eliminates the need of

. . . committee activity altogether, thus further reducing the influence of certain psychological factors, such as specious persuasion, the unwillingness to abandon publicly expressed opinions, and the bandwagon effect of majority opinion. This technique replaces direct debate by a carefully designed program of sequential individual interrogations (best conducted by questionnaires) interspersed with information and opinion feedback derived by computed consensus from the earlier parts of the program. Some of the questions directed to the respondents may, for instance, inquire into the "reasons" for previously expressed opinions, and a collection of such reasons may then be presented to each respondent in the group, together with an invitation to reconsider and possibly revise his earlier estimates. Both the inquiry into the reasons and subsequent feedback of the reasons adduced by others may serve to stimulate the experts into taking into due account considerations they might through inadvertance have neglected, and to give due weight to factors they were inclined to dismiss as unimportant on first thought.

Since it was first devised by Dalkey and Helmer in 1953, the Delphi technique has been employed in several reported studies. Five of these are reviewed below as specific examples of how the technique has been used in various fields of research.



### Review of Related Delphi Studies

Gordon and Helmer study. A study conducted by Gordon and Helmer in 1964 (Helmer, 1966:44-96) used an international group of experts in six separate panels to make predictions relating to six areas (one panel to each area). The areas were chosen to provide broad coverage of the most important determinants of the society of the future. They were: scientific breakthroughs, population control, automation, space progress, war prevention, weapon systems. Each panel of experts answered four sequential questionnaires, spaced approximately two months apart.

The intended purpose of the study was both substantive and methodological. Substantively, the researchers aimed at assessing long-range trends (from ten to fifty years) in the areas selected. Methodologically, they hoped to gain some insights into specific needs for further research of this nature.

Initial statements of expected developments in each of the areas were obtained from the panel members. An attempt to reach consensus was made by feeding back the median and interquartile range of predictions for each item. Reasons for opinions deviating from that of the majority were invited from panel members.

Though the results indicated a reasonably satisfactory convergence of opinions, the researchers make the following cautionary remarks:

1. A number of questions were not pursued because of an initial highly divergent response.
2. In a number of cases where a question was pursued through several rounds, a considerable divergence of opinion persisted.

On the substantive aspect of the study, the researchers expressed surprise at several of the items identified by panel members.



In addition they pointed out certain warnings which seemed to be implied in the opinions of the respondents. The warnings included the possibilities of war, of a continuing maldistribution of food and other commodities in the face of plenty, of social upheaval resulting from progressive automation, and of unbridled biological applications of molecular engineering.

Ament study. A follow-up study to the one described above was completed recently at The Institute of the Future and reported by Ament (1970:35-44). A comparison of similar items made five years apart using different panels of respondents produced the following interesting results:

1. Relative consistency of the forecasts
2. A shift to earlier median dates of many biological forecasts and to later dates of several space forecasts
3. Similar forecasting behaviour, at least in terms of the spread of opinions, as a function of median time in the future.

Bjerrum study. A modification of the Delphi technique was used in a study reported by Bjerrum (1969:331-38). The field being investigated was electronic data processing. Instead of eliciting experts' suggestions on developments in this field, the researcher developed a list of possible future events and sent it out to all participants of FILE 68, an international seminar on file organization held in 1968. The respondents were asked to give their intuitive judgment of the time these events might occur by indicating dates in one of four columns: Year, Before, After, and Between. If they did not believe an event might occur before the year 2000 (the farther limit of the time period being considered), a column was provided for No answers. Participants were also asked to give any remarks they might have regarding an item.

Only two questionnaires were used. Queries raised in the first were re-evaluated for the second according to four criteria: Yes-No



percentages; time span indicated; comments and remarks; new questions suggested. On the second questionnaire new opinions concerning future dates were sought from respondents using a method of feedback similar to that reported by Gordon and Helmer.

Substantive results of the study revealed that the electronic data processing field will have important consequences for society and democracy during the next thirty years. A finding related to methodology indicated that the participants displayed a rather short forecasting range of about fifteen years.

Bender study. In the field of medicine Bender et al (1969:289-303) used the Delphi method to probe future developments in the areas of biomedical research, diagnosis, medical therapy, health care, and medical education. As in the Bjerrum study two questionnaires were used. The first requested participants to list important discoveries, breakthroughs, changes in methodology, and other events which they thought might occur for each section within the next fifty years. The second asked them to rate the medical need and the social-ethical desirability of the described event and to estimate when it had a 50 to 90 percent chance of occurring. In addition each respondent was asked to rate his own knowledge of each area by describing it as derived from awareness, reading, or working. The data from the study was used to construct a scenario for the years 1978-83, which portrayed portions of the education, training, practice, and research of an American student entering medical school about 1978 and commencing practice in the early 1980's.

Dalkey study. The above studies were all primarily concerned with using the Delphi technique to derive substantive information concerning the future of areas covered by the investigation. A rather different



set of experiments are described by Dalkey (1969a:408-426 and 1969b:541-51) which essentially emphasized methodology and aimed at evaluating the effectiveness of the Delphi procedures for formulating group judgments. Upper-class and graduate students from the University of California at Los Angeles were used as subjects, and general information of the almanac type comprised the subject matter. Ten experiments, involving fourteen groups ranging in size from eleven to thirty members, were conducted.

Dalkey reports the following general findings:

1. More often than not, face-to-face discussion tended to make group estimates less accurate, whereas, more often than not, the anonymous controlled feedback procedure made the group estimates more accurate.
2. The average error on round one was found to be a linear function of the dispersion of the answers; and the average amount of change of opinion between round one and round two was found to be a well-behaved function of two parameters--the distance of the first round answer from the group median, and the distance from the true answer.
3. A meaningful estimate of the accuracy of a group response was obtained by combining individual self-ratings of competence on a question into a group rating.

#### The Delphi Technique and Educational Planning

The studies reviewed above illustrate the usefulness of the Delphi technique in predicting the future in different areas and in increasing the effectiveness of group judgments. Both of these characteristics suggest that the method has considerable potential for use in educational planning where many policy decisions are made on the basis of what the relevant aspects of the future might be.



In this regard several applications of the Delphi method have been suggested by Helmer (1967:80). He feels that it would be particularly useful to a superintendent of schools who wished to take opinion soundings of administrators in his district concerning a proposed curriculum reform. At a provincial level the superintendent himself might be a member of a Delphi panel set up to investigate the feasibility of carrying out a building program. In a university context a long-range expansion program could be based on a Delphi study using a cross section of departmental representatives as a panel of respondents.

As a practical example of the use of the Delphi technique in educational planning, Helmer (1967:82-96) reports that a pilot experiment was carried out at the Educational Innovations Seminar held at the Institute of Government and Public Affairs, University of California at Los Angeles, in 1965. The respondents for this experiment consisted of the following groups: (1) members of the Educational Innovations Seminar, augmented by an outside group of experts in various fields related to education; (2) members of the Steering Committee of the Educational Innovations Seminar; and (3) participants in the Conference on Educational Innovations.

In the first two stages of the procedure respondents were asked to suggest specific educational innovations, then evaluate them in terms of their desirability, importance, and feasibility. In the final stage the task was to allocate a fictitious five-year budget of ten billion dollars among the proposed innovations.

As the primary purpose of the study was to explore the potentialities of the Delphi technique in the area of educational planning, Helmer states that not too much weight should be given to any substantive findings.



However, he claims that the participants found the method very promising and felt encouraged to apply the technique to similar problems in a more comprehensive manner in the future.

In conclusion, it can be said that the Delphi method appears to possess considerable potential for educational planning, and as such its use should be seriously considered as a desirable preliminary step to making important policy decisions. The present study represents one example of such an approach.



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## Chapter 3

### RESEARCH PROCEDURES

The research undertaken for the study is described in this chapter in two main parts. The first section contains details of the procedure followed to gather information pertaining to general education in Alberta's post-secondary, non-university educational institutions. The second part describes the Delphi study undertaken to provide some insight into future problems facing Alberta society, which might have significance for general education at the post-secondary level.

#### GENERAL EDUCATION SURVEY

##### Introduction

In order to obtain details of the current position of general education in post-secondary, non-university educational institutions in Alberta, information was sought from the presidents and principals of the institutions described by Campbell (1969:13-14) as being designated to become comprehensive community institutions in Alberta. The institutions concerned were: the five public colleges at Medicine Hat, Lethbridge, Calgary, Red Deer, and Grande Prairie; the two institutes of technology at Edmonton and Calgary; and the three agricultural and vocational colleges at Olds, Vermilion, and Fairview. In addition the presidents of three church-related colleges, also mentioned by Campbell, were contacted: Camrose Lutheran College at Camrose, Concordia Lutheran College at Edmonton, and College Saint-Jean at Edmonton.



### The Instrument

A General Education Questionnaire consisting of five questions was prepared for forwarding to the presidents and principals of the institutions mentioned above. A copy of this questionnaire is included in Appendix A.

Question 1. Question 1 sought to discover which institutions considered they were offering general education, and what they understood the term to mean.

Question 2. Question 2 was designed to learn which institutions, if any, had formalized a concept of general education into specific objectives.

Question 3. Question 3 asked for information at the operational level. The institutions were requested to report on general education in four broad areas: courses, activities, events, and materials. Each area was sub-divided into two categories: formal and informal. In effect, this constituted breaking general education up into eight parts, the intention being to give the institutions as wide a field as possible in which to reply. In accordance with an approach used by Medsker (1960: 59), institutions which reported the use of specially devised courses were asked to indicate the fields in which these courses had been offered.

Question 4. Question 4 was intended to discover to what extent future provision for general education was being considered by the institutions.

Question 5. Question 5 requested information on problems which faced individual institutions in making provision for general education.



### Procedure

The General Education Questionnaire was forwarded together with a covering letter to the presidents and principals of the institutions included in the survey. A copy of the covering letter is included in Appendix A. By the time the deadline date had passed ten of the thirteen institutions had returned the questionnaire. A reminder letter was sent to the remaining three, and their replies were subsequently received. Thus, a return of 100 percent was secured.

### DELPHI STUDY

#### Introduction

In addition to carrying out the survey described above, the study aimed at gaining insight into future societal problems facing Alberta. This approach was based on the belief that programs of general education should, at least in part, be both problem and future oriented. Accordingly, a long-range forecasting technique was employed to solicit the opinions of knowledgeable people from a wide variety of areas concerning the major problems, relevant to general education, likely to face Alberta society during the next thirty years.

In the area of long-range forecasting, Dalkey (1969:409-15) asserts that a large part of the activity is concerned with opinion rather than factual knowledge. One of the difficulties facing the researcher in this field is how best to use the opinions of individuals knowledgeable in their areas of expertise, so that their combined opinions can be brought to bear on the problem being examined. The Delphi technique has been designed as one approach to utilizing expertise, and a modification of this method was used in the present study. The remainder of



this chapter is devoted to a description of the research procedure followed in using the Delphi technique, including the selection of the population, collection of the data, and treatment of the data.

### The Population

Nature of the population. The population for the study consisted of respondents from a wide variety of fields, each with recognized expertise in his area of specialty. The basis for deciding which fields to include was derived from a concept of general education as education concerned with the individual and social activities of man. Man's participation in individual and social pursuits was viewed in the context of a dualism in his nature: part physical, part spiritual. The major needs and controlling factors of his physical and spiritual well-being were then identified. Those relating to his physical nature were determined to be: food, clothing, marketing, shelter, technology, health, physical recreation, labour, natural resources, transport, finance, law, and government. Those relating to his spiritual nature were identified as: acceptance by others, concern for others, communication, travel, concept of self, religion, education, ideas, and the arts.

It will be noted that, for the purpose of obtaining a classification, the physical and spiritual aspects of man were treated as being dichotomous, and the specific needs and controlling factors were regarded as discrete quantities and classified as either physical or spiritual. The classification thus derived is displayed in Table 1.

The needs and controlling factors listed above may also be viewed in relation to Maslow's (1954:80-87) concept of a hierarchy of needs. According to Maslow, man's needs may be arranged in a hierarchy of five parts: (1) physiological--needs related to food, shelter, exercise;



Table 1

Classification of Needs and Controlling  
Factors of Modern Man in  
Alberta Society

Need or controlling factor of physical man	Need or controlling factor of spiritual man
Food	Acceptance by others
Clothing	Concern for others
Marketing	Communication
Shelter	Travel
Technology	Concept of self
Health	Religion
Physical recreation	Education
Labour	Ideas
Natural resources	The arts
Transport	
Finance	
Law	
Government	



(2) security--needs relating to protection against danger, threat, deprivation; (3) social--needs relating to acceptance, belonging, association; (4) ego--needs relating to one's self-esteem; and (5) self-fulfilment or self-actualization--needs relating to the realization of one's own potentialities and creativeness. A suggestion of how the physical-spiritual classification described above may be viewed in terms of Maslow's hierarchy is shown in Table 2.

Once the basic classification had been established, consideration was given to where in Alberta society individuals might be found who had (a) an interest in education, and (b) the expertise which would qualify them to represent the needs or controlling factors referred to above. The population was seen as falling into three groups: (1) individuals actively and directly involved in the process of education at the post-secondary and secondary levels; (2) individuals knowledgeable in the activities of various government departments, or agencies associated with government or education; and (3) individuals from other relevant segments of society.

The first group was sub-divided into three categories: post-secondary (non-university), university, and secondary. Complete details are displayed in Table 3. The second group was also sub-divided into three categories: provincial government departments, federal government departments, and agencies associated with government or education. Table 4 shows further details. Group three was arranged in five categories: business, industry, the arts, communication, and religious groups. Complete details are shown in Table 5.

In most instances one person only was chosen from each of the fields represented in Tables 3, 4, and 5. However, because of the



Table 2

Classification of Needs and Controlling  
Factors in Relation to  
Maslow's Hierarchy

Maslow's hierarchy of needs	Needs and controlling factors from Table 1	Aspects of man from Table 1
1. Physiological	Food Clothing Marketing Shelter Technology Health Physical recreation Natural resources Transport	Physical
2. Security	Finance Law Government	Physical
3. Social	Acceptance by others Concern for others Communication Travel	Spiritual
4. Ego	Concept of self Religion Education	Spiritual
5. Self-fulfilment or self-actualization	Ideas The arts	Spiritual



Table 3

Classification of Population Actively  
and Directly Involved in the  
Process of Education

Type of institution	No. of persons selected
1. Post-secondary (non-university)	
Administration	2
Staff	2
Students	2
Governors	2
2. University	
Philosophy	1
Psychology	1
Sociology	1
Anthropology	1
Zoology	1
Genetics	1
Pharmacology	1
Computing science	1
Political science	1
Education	1
Economics	1
Humanities	1
Extension	1
Students' union	1
3. Secondary	
Administration	1
Staff	1
Trustees	1
Total	25



Table 4

Classification of Population from  
Government Departments and  
Agencies

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Department or agency	No. of persons selected
1. Provincial government departments	
Social Development	1
Education (curriculum)	1
Agriculture	2
Health	2
Industry and Tourism	2
Labour	1
Treasury	1
Youth	1
2. Federal government departments	
Manpower	1
Indian Affairs	1
3. Agencies	
Legislative Assembly	1
Alberta Colleges Commission	1
Canadian Colleges Commission	1
The Alberta Teachers' Association	1
Human Resources Research Council	1
Alberta Federation of Labour	1
Law enforcement	1
Alberta Housing & Urban Renewal Corp.	1
Indian Association of Alberta	1
Edmonton Social Planning Council	1
Total	23

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Table 5

Classification of Population from  
Other Relevant Segments of  
Society.

Societal segment	No. of persons selected
1. Business	
Finance	1
Retail marketing	1
Travel	1
2. Industry	
Transport	1
Architecture	1
3. The arts	
Theatre and film	1
Music	1
Fine arts	1
4. Communication	
Publishing	1
Creative writing	1
Newspaper	1
Television and radio	1
5. Religious groups	1
Total	13



emphasis of the study on post-secondary, non-university education, two persons were selected from each of the fields shown under that heading in Table 3. Table 4 shows that two persons were chosen from each of the provincial government departments of Agriculture, Health, and Industry and Tourism. This was done because of the wide variety of activities encompassed under those departments.

By means of cross-references the three groups displayed in Tables 3, 4, and 5 were incorporated into one specific population based on the spiritual-physical dichotomy shown in Table 1. The classification according to the physical aspect of man is displayed in Table 6, and that derived from the spiritual aspect is shown in Table 7. The total number of persons included in the population was sixty-one. This was considered to be a reasonable number to work with using the Delphi technique.

The final classification shown in Tables 6 and 7 was not entirely derived before the process of selecting respondents began. A working framework was prepared, and this was modified according to suggestions of various persons prominent in their fields, who were contacted by the researcher during the process of selection.

Selection of the population. Two general assumptions were made with respect to selecting the individual respondents:

1. There are persons knowledgeable in their areas of interest who are able to identify developing and future problems in those areas.
2. Such knowledgeables can be identified on the basis of their reputations.

A modification of the reputational technique for identifying influentials, as developed by Hunter (1953) and used by Matthews (1967), was employed to select the population. Both Hunter and Matthews were



Table 6

Classification of Population According  
to Physical Man Concept

Need or controlling factor	Represented by	From Table	No. of persons selected
Food	Dept. of Agriculture	4	1
Clothing Marketing	Retail marketing	5	1
Shelter	Architecture Alberta Housing & Urban Renewal Corporation	5 4	1 1
Technology	Zoology Genetics Computing Science Dept. of Industry and Tourism	3 3 3 4	1 1 1 2
Health	Pharmacology Dept. of Health	3 4	1 2
Physical recreation	Dept. of Youth	4	1
Labour	Dept. of Labour Dept. of Manpower Alberta Federation of Labour	4 4 4	1 1 1
Natural resources	Dept. of Agriculture	4	1
Transport	Transport	5	1
Finance	Economics Treasury Dept. Finance	3 4 5	1 1 1
Law	Law enforcement	4	1
Government	Political Science Legislative Assembly	3 4	1 1
Total			24



Table 7

Classification of Population According  
to Spiritual Man Concept

Need or controlling factor	Represented by	From Table	No. of persons selected
Acceptance by others	Dept. of Social Development Dept. of Indian Affairs Indian Association of Alberta Human Resources Research Council	4 4 4 4	1 1 1 1
Concern for others	Sociology Anthropology Edmonton Social Planning Council	3 3 4	1 1 1
Communication	Publishing Creative writing Newspaper Television and radio	5 5 5 5	1 1 1 1
Travel	Travel	5	1
Concept of self	Psychology	3	1
Religion	Religious groups	5	1



Table 7 (continued)

Need or controlling factor	Represented by	From Table	No. of persons selected
Education	Post-sec. administration	3	2
	Post-sec. staff	3	2
	Post-sec. students	3	2
	Post-sec. governors	3	2
	University: Education	3	1
	University: Extension	3	1
	University: Humanities	3	1
	University: Students' union	3	1
	Secondary administration	3	1
	Secondary staff	3	1
	Secondary trustees	3	1
	Dept. of Education	4	1
	Alberta Colleges Commission	4	1
	Canadian Colleges Commission	4	1
	The Alberta Teachers' Assoc.	4	1
Ideas	Philosophy	3	1
The arts	Theatre and film	5	1
	Music	5	1
	Fine arts	5	1
Total			37



concerned with identifying persons of power and influence in a community. They did so by asking a panel of "experts", who were assumed to be well acquainted with the socio-political milieu within which they lived and worked, to nominate the influentials in the community. Those nominated by the panel were, in turn, invited to nominate those whom they perceived to be influential in affecting decisions on general community problems and issues. The process was continued until the number of duplications exceeded by far the number of new nominations.

The present study, however, was not concerned with identifying influentials, but rather with selecting persons of expertise in specific areas of interest. It was assumed that the required respondents would be known by persons in positions of authority or prominence in fields related to the study. Accordingly, a list of such persons was compiled, using the classifications displayed in Tables 3, 4, and 5 as a basis. Table 8 gives the details of this list, showing the number of persons, their positions or fields of work, and the related population table.

The total number of persons selected to identify respondents was thirty-six. The list was not finalized before some of the persons were contacted, and the final form grew out of suggestions made by people interviewed. Table 8 shows that a comparatively large number of persons were approached in university, government, and related circles. This can be attributed to the fact that the work being carried out in these areas tended to be highly specialized and was not generally well known by persons outside the department or agency concerned.

Eleven of the thirty-six persons from Table 8 were interviewed personally; the remainder were contacted by telephone. All were briefly informed of the nature of the study and were asked to nominate individuals



Table 8

Positions or Fields of Persons Selected  
to Identify Respondents

Position or field	Related Table	No. of persons interviewed
College president	3	2
Official of Alberta Association of Students	3	2
Head of university department	3	13
Other university personnel	3	2
Official of University of Alberta Students' Union	3	1
Edmonton Public School Board	3	1
Senior official in provincial or federal government department	4	5
Senior official in agencies associated with government or education	4	6
Business	5	1
Industry	5	1
The arts	5	1
News media	5	1
Total number of persons interviewed		36



whom they considered to be qualified, experienced, and competent in certain specific fields. Where time and the interest of the person being interviewed permitted, suggestions were invited of possible respondents in all areas covered by the study. If more than one respondent was nominated in a particular field by the same person, an order of preference was obtained. For all individuals nominated, an indication was requested of the basis on which the nomination was being made; for example, working personally with the individual, detailed knowledge of his work.

The criteria used by the researcher in deciding who should finally be selected as a respondent, may be summarized as follows:

1. All persons who had been nominated more than once were considered as possible respondents.
2. A person nominated more than once with at least two strong recommendations was selected.
3. A person nominated only once but with strong recommendation was selected in preference to a person nominated more than once but with no strong supporting recommendation.
4. No person was selected who had not received at least one nomination with a strong recommendation.

The above criteria proved adequate in distinguishing between different persons nominated in the same field. Subjective judgment on the part of the researcher was kept to a minimum by assuring that all persons finally selected had been nominated by at least one of the thirty-six persons in positions of authority or prominence as shown in Table 8. Three of the respondents initially selected declined to participate when contacted, and were replaced in accordance with the above



criteria. Of the sixty-one respondents finally selected, thirty-one received one nomination, fourteen received two, nine received three, five received four, and two received five nominations.

Selected respondents were contacted initially by telephone and asked if they would participate. A copy of the telephone message used with all respondents is included in Appendix B. When their verbal commitment to the project had been given, a confirming letter was forwarded to them, together with a memo for return to the researcher, which would serve as the respondents' written commitment. Copies of the confirmation letter and return memo are provided in Appendix B.

#### Collection of the Data

The method employed for the systematic solicitation of opinions from the selected population was a modification of the Delphi technique. Use of this method entailed a four-part research procedure spread over a period of approximately four months. Copies of all four instruments used, including response sheets, are contained in Appendix C. Salient research details are given below.

Part I. An initial design of the instrument for Part I was prepared and subsequently refined on the basis of suggestions received from twelve graduate students in the Department of Educational Administration at the University of Alberta who acted as a pre-test group. The revised instrument was then submitted as the first questionnaire of the Delphi investigation. It gave a brief introduction to the study and asked the participants

. . . to list on the sheet provided the major problems in areas of special concern to you, which you believe will develop at any time during the next thirty years, and which may influence general education in Alberta's post-secondary, non-university educational institutions.



A deadline of ten days was established for the return of response sheets, and a reminder notice was sent to all respondents who had not replied by the set date. Fifty-five replies were received by the time of final compilation of Part II. This represented a 90 percent return.

Part II. The statements provided by respondents in Part I constituted the basis of Part II. Of a total of 232 statements received, many were found to be similar or contained within others, and in the compilation of Part II the total number was reduced to eighty. For ease of reference the statements were grouped into eighteen sets. Assistance and suggestions were received throughout from members of the pre-test group referred to in Part I. The eighty comprehensive statements were then sent out to all of the original respondents.

For each statement the respondents were asked to make a prediction by referring to the following question:

On the basis of past and present trends when, in your opinion, will the problem or development reach such proportions that it will be clearly recognized by a majority of people affected by it?

The implication is that by the time it is so recognized it will already have reached serious or obvious proportions. If any corrective measures are necessary, they should therefore be implemented before this time.

The predictions were to be made by checking one of the following categories provided on the response sheet:

1970-71	Later
1972-75	Never
1976-80	Perpetual problem
1981-85	

In addition to making a prediction about the probable date of occurrence of the problem or development, respondents were asked to



make two more judgments: (1) their opinion of the desirability of the contents of each statement, and (2) a self-appraisal of their degree of competence in making a prediction about the statement. They were also asked to provide three items of personal data: age, length of time in their present position, and highest academic qualification.

The procedure of setting a deadline and sending out reminder notices was repeated as in Part I. A total of forty-seven replies, constituting a 77 percent return, were received.

Part III. The purpose of Part III was to elicit reasons from respondents concerning certain predictions they had made in Part II. For each statement respondents who had made the earliest and latest predictions were identified, and a decision was made that no more than six would be contacted for each statement: three "early" predictors and three "late/never" predictors. In deciding which respondents to contact for reasons concerning specific statements, a combination of two methods was employed. As much as possible, respondents who had originally provided a statement were asked for reasons concerning it; then the remainder (to a maximum of three) were randomly selected from those who had been identified as "early" or "late/never" predictors for that particular statement.

Of the forty-seven respondents who had replied to Part II, forty-four returned Part III. This constituted a 94 percent return.

Part IV. In preparing the instrument for Part IV, the "early" reasons submitted by respondents in Part III were combined by eliminating repeated ideas, though the original wording was retained as much as possible. A similar procedure was followed for the "late/never" reasons. The original statements, together with both sets of reasons,



were then sent out to all of the respondents who had originally agreed to participate. They were asked to reconsider and possibly revise the predictions they made in Part II in the light of the reasons now supplied. In addition they were again asked to provide a self-appraisal of their degree of competence in making a prediction about a particular statement. However, it was not considered necessary for them to repeat their opinions, given in Part II, concerning the desirability of the contents of the statement.

Again, a deadline was set and reminder notices sent out. A total of forty-five replies were received, constituting a 74 percent return.

#### Treatment of the Data

The data obtained from the study were treated in two distinct ways: (1) those from Part I (in the form of statements) and those from Part III (in the form of reasons) were analysed as reported above to constitute the basis of Parts II and IV respectively; (2) those from Parts II and IV were quantified for computer processing.

Part II data. The following procedure was used to prepare data from Part II for analysis by computer:

1. Respondents' last names were arranged alphabetically and each was replaced with an identification number from one through sixty-one.

2. The predicted date of occurrence for each statement was assigned a number, ranging from one through seven, depending on the category selected by the respondent. Table 9 illustrates the procedure.

3. The respondent's opinion on the nature of the statement was scored as one, two, or three corresponding to the desirable, indifferent, and undesirable categories appearing on the response sheet (see Table 9).



4. The degree of competence was given a weight of one, two, or three corresponding to the low, medium, and high categories on the response sheet (see Table 9).

5. Personal data were quantified according to numbered categories checked by the respondent on the response sheet.

Part IV data. Part IV data were prepared for analysis in the same way as those of Part II, except that personal data and data relating to the respondents' opinions of the nature of the statement were not included in Part IV.

Additional personal data. On the basis of information already in the possession of the researcher, respondents were grouped in four additional classifications: (1) sex; (2) field of work--three categories: according to Tables 3, 4, 5; (3) field of work--three categories: university, other educational institutions, non-education; (4) field of work--two categories: education, non-education. For the purposes of computer processing the different groups were assigned number categories as shown in Table 10.

Table 9

Number Categories Corresponding to Response Sheet  
Headings from Part II

Probable date of occurrence							Nature of the statement			Degree of competence		
70-	72-	76-	81-	Later	Never	Perpet. problem	Desir- able	Indif- ferent	Undesir- able	High	Med.	Low
71	75	80	85									
1	2	3	4	5	6	7	1	2	3	3	2	1



Table 10  
Number Categories of Additional  
Personal Data

Classification	Number categories		
	1	2	3
1. Sex	Male	Female	
2. Field of work	Table 3	Table 4	Table 5
3. Field of work	University	Other educational institutions	Non-education
4. Field of work	Education	Non-education	



Recording the data. All data, quantified as described above, were recorded on an eighty-column data punching form. Identification numbers were listed vertically and all other data were recorded horizontally. Three columns were required for each statement. The data were then punched on computer cards in preparation for analysis.

Computer program. A specially designed computer program was used to analyse the data. The program produced the following information on request:

1. A table showing personal data of respondents.
2. A general table showing the distribution of the responses of the population treated as a whole.
3. Various other tables showing the distribution of the responses of different sub-groups of the population.
4. A table showing how individual respondents had distributed their replies in the seven response categories under probable date of occurrence.
5. A table showing the actual respondents who checked each category on the response sheet for each statement.
6. A total degree of competence for each statement obtained by combining individual self-ratings of competence into a group rating.



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## Chapter 4

### RESEARCH FINDINGS

In this chapter the research findings are reported. The first section presents the results of the general education survey, and the second contains an analysis of the data derived from the Delphi study into future problems relevant to general education in the Alberta setting.

#### GENERAL EDUCATION SURVEY

For purposes of analysing the data obtained from the General Education Questionnaire, the responding institutions were grouped into four categories: public colleges, institutes of technology, agricultural and vocational colleges, private church-related colleges. The data were analysed in five parts, corresponding to the five questions on the instrument. Within each part the responses of the four categories of institutions were examined.

##### Question 1

Question 1 on the General Education Questionnaire reads as follows: Does your institution offer general education? If so, how do you define general education?

Public colleges. All of the public colleges stated that they offered general education only in so far as academic and vocational courses may be considered as general education for students who take them. Two colleges reported that they had plans to make definite



provision for general education in the fall of 1970. Details of these plans are reported under Question 4.

None of the institutions provided a specific definition of general education. One stated that it subscribed to a definition parallel to the one used in this study, namely, education which prepares an individual to live more fully as a person and more effectively as a citizen. Other replies stated aims of general education rather than definitions. One reported aim was to unify disparate disciplines in courses of an integrative nature. Another college stated that general education "increases a student's sensitivity to the diversity and alternatives of life and to his physical, social, and aesthetic environment." Such a general education could include studies in the natural sciences, social sciences, humanities, and the area of communications.

Institutes of technology. Both institutes of technology stated that they offered general education on a limited basis. One of them defined general education as education which: (1) provides basic knowledge in English, mathematics, and the social and physical sciences; and (2) contributes to the development of an individual student as an informed citizen in the technological age. The other institute described general education as consisting of studies in literature, art, economics and the social sciences.

Agricultural and vocational colleges. All three agricultural and vocational colleges reported that they offered general education, but statements of what is meant by the term varied widely. One institution felt that all education was general education. Another stated that general education was primarily concerned with providing basic knowledge in the same areas as mentioned in the preceding paragraph. The third college saw it as education which does not serve a specific occupational objective.



Private church-related colleges. All three of the private church-related colleges reported that they offered general education. One stated that it defined the term in relation to a liberal arts curriculum, while the others suggested definitions relating to the quality of the personal life of the individual. One college saw general education as "the process whereby a person obtains significant knowledge about himself and his environment and learns to integrate these in meaningful living." Another stated that general education provides "young people with the skills whereby they can create a community to support them in their attempts to become more sensitive to truth, beauty, honesty, and personal growth."

Summary. In summary it can be said that all of the institutions surveyed felt that they were providing some general education. However, considerable lack of agreement existed among them as to the meaning of the term. Definitions ranged from equating general education with a liberal arts curriculum at a university level to stating that its aim is to provide basic knowledge in English, mathematics, and science. Only one institution specifically mentioned the interdisciplinary nature of general education, but several indicated its importance in developing the personal life of the individual.

#### Question 2

In the second item on the questionnaire respondents were asked to reply to the following question: Does your institution have specific objectives regarding general education? If so, please state them.

Public colleges. As in Question 1 differences of opinion were apparent among the public colleges in their replies to this item. One institution equated general education with a "general university transfer



program," and stated as an objective the establishment of such a program which would permit non-matriculants to enroll. Another college reported that it had no specific objectives regarding general education. A third institution stated that its objective in this regard was to meet the needs and desires of the people in its service area. The remaining two colleges referred to general education courses which they propose to set up in the fall of 1970, and stated general rather than specific objectives. One spoke of providing "two years of general education for persons interested in education as an end in itself rather than as a preparation for an occupation." The other institution stated that "the over-all objective of general education is to assist the student in acquiring the common knowledge, thinking abilities, and attitudes needed to be effective as a person, as a member of a family, and as a citizen."

Institutes of technology. One institute of technology reported that at the present time no specific objectives had been formulated, but a curriculum review was being carried out and within the next calendar year specific objectives would be developed. The other institute provided general objectives only, referring to the preparation of students to function effectively in the changing technological age, and to postponing "inevitable obsolescence."

Agricultural and vocational colleges. As with the public colleges a considerable range of opinion was apparent in the replies received from the agricultural and vocational colleges. The institution which had stated in reply to Question 1 that all education was general education did not give any specific objectives and did not reply to any of the other items on the questionnaire. A second college listed as objectives of



general education the upgrading of adults and the broadening of the scope and outlook of graduates. The third institution stated that its objectives of general education were to provide a background for making more realistic decisions in relation to: (1) broadening one's ability to communicate, (2) changing occupational objectives, (3) adjusting to the demands of living and working with other people, and (4) broadening the scope for using leisure time.

Private church-related colleges. The objectives stated by the three private church-related colleges were consistent with the concept of quality in life apparent in the definitions expressed in their replies to Question 1. One college stated the following broad, institutional objective: to offer "each student a program of academic instruction and personal guidance which seeks to further his spiritual, intellectual, emotional, social and physical growth, so that he may realize his full potential, according to his age level, for a life of service to God and to his fellowman." A second college, referring to its concept of a liberal arts curriculum, stated that "it is our objective to offer education that prepares our students for self-understanding, responsible citizenship, vocational usefulness; students who have a theological perspective and a basic humility which perceives that they have only begun the process of knowing." The remaining college stated the following as objectives of the general education which it provides: (1) to foster virtue (truth, beauty, honesty) in the lives of all members of the institution; (2) to develop the students' ability to relate on a personal level to people; (3) to understand and become critically involved in building a Canadian culture.



Summary. Replies to Question 2 indicate that none of the institutions surveyed had developed specific operational objectives of general education. However, several reported more general aims concerned with assisting the individual to live more fully as a person and more effectively as a citizen. In this regard the private colleges placed greater stress on the importance of spiritual growth than did the other institutions.

### Question 3

Question 3 on the General Education Questionnaire reads as follows: If general education is offered in your institution, what kinds of formal and informal courses, activities, events, and materials are provided? If you are offering courses specifically devised for general education, please indicate the fields in which they are offered.

Public colleges. With regard to this question two of the five public colleges did not provide any details of their general education offerings. These were institutions which, in reply to Question 1, had indicated that they had no special provisions for general education outside of regular academic or vocational courses. Another college reported formal courses and experiences in art and music as well as general interest seminars on subjects of current interest to the populace at large. Under formal courses a fourth college reported only regular university courses in the natural sciences, social sciences, and humanities. Under activities it included an athletics program, fine arts festival, and various clubs. Materials described as contributing to general education were books, magazines, recordings, and a limited collection of paintings. The remaining college gave details in answer to this question of the



special courses which it plans to introduce in the fall of 1970. These courses are described in this report under Question 4. None of the five colleges reported that any courses specifically devised for general education were currently being offered.

Institutes of technology. Under courses offered in general education both institutes of technology reported courses in English, the social sciences, and economics. One of the institutes also included in this section art appreciation and art history. Neither institution reported any courses specifically devised for general education, but one stated that it offered informal courses in learning theories and study methods. With respect to informal activities one institute mentioned closed circuit television and a film society, while both institutions reported such informal events as students' "hot-seat", weekly meetings on contemporary issues, films on social problems, visiting speakers and panel discussions. One institute described its library resources and music selections from its own radio station as materials contributing to general education.

Agricultural and vocational colleges. Of the two agricultural and vocational colleges which answered this question, one reported that courses in the pre-technology and technology programs constituted a general education offering. The same institution stated that it had specifically devised courses for general education in the fields of English, mathematics, the natural sciences, and social studies. However, these courses were further described as being part of the up-grading and pre-technology programs, which would indicate that they were not courses in general education for the entire student body. The other institution reported that it offered formal courses in communications, personal



development, human relations, and business ethics. None of these courses was described as being specifically devised for general education.

Both institutions described residence life, student government, and athletics as formal activities contributing to their general education offerings. Various clubs and other extra-curricular involvement were included under informal activities. Formal events mentioned by one institution consisted of league sports, luncheons, and literary programs. The same college described the following as materials contributing to general education: gymnasium and auditorium facilities, community resources, and assistance given by faculty members.

Private church-related colleges. Two of the private colleges reported that their formal course offerings in general education consisted of academic programs at both the high school and university levels. One of these colleges also reported specifically devised courses for general education in the fields of art, science, and education; but no details were given of how these courses differed, if at all, from the regular academic courses. Under formal courses the other institution made specific mention of French and English literature, philosophy, classics, the natural and social sciences, and history. In addition this college stated that it offered a specifically devised course in religious science.

With respect to informal courses one college stated that it provided sessions on group dynamics and social action. Another college reported that it was experimenting with non-credit courses in the arts and sciences for the general public. It also stated that it offered off-campus experiences including an outdoor school in the mountains at the end of the academic year.

Among the formal activities contributing towards general education



one institution reported orientation sessions, a week-long live-in for new students, and participation by students in administration and self-government. The other two colleges mentioned physical education, interscholastic sports, and a choral society under this section. One institution described its informal general education activities as consisting of an intramural program, a drama society, and science and journalism clubs. Another college showed a social action bias in its informal activities. They included T-group and social animation sessions for groups of students, and panel discussions on relevant topics. With respect to events of a general education nature two colleges mentioned convocations and guest speakers and lecturers. None of the colleges reported any materials which they considered significantly contributed to their general education offerings.

Summary. The replies to Question 3 suggest that general education was largely provided in informal ways. Opportunities for social interaction seemed to be well established in most institutions, and those with residence facilities indicated that these added an extra dimension to their provision of general education. On the other hand, formal instruction concentrated heavily on academic and vocational courses, and any contribution that such courses made to the general education of students appeared to be of secondary importance. In particular, the institutions had apparently done little in the way of providing specially devised courses for general education.

#### Question 4

The fourth item on the questionnaire consisted of the following question: Does your institution have plans for future provision of general education? If so, please describe briefly.



Public colleges. All five public colleges reported that they intended to extend general education offerings in the future. However, the indications of what would be included in this extension varied considerably. One college referred only to its desire to establish a general university transfer program which would admit non-matriculants. Another reported that it was expecting to offer in the near future associated arts and associated science degrees and that these would contain some courses which would be required as a general education content. A third college reported its intention to remain flexible and expand as the need dictates to provide eventually for the widest possible range of specific and general educational service.

The two remaining colleges had specific plans for expanding their general education offerings in the fall of 1970. One institution reported that it would be offering for the first time a program entitled "Arts-Science Diploma Program" which would serve the purpose of providing a general education option for those not seeking specific occupational training. The proposed expansion of general education in the other college was reported to be in the form of sixteen specially devised courses, rather than a separate program as described in the preceding comment. Eight of the projected courses will be offered in 1970-71, and the following academic year will see the implementation of the sixteen. In an introductory description of these courses the college stated that:

1. Each course attempts to integrate and harmonize several previously distinct disciplines
2. Each course attempts to be relevant to the students' needs, not only by this unity, but also by its theme and content
3. We have also attempted to provide some over-all harmony among courses with identical numbers.



The proposed courses are to be offered in the following areas: Communications (Human Ecology, Man and Media, Man and Myth); Humanities (Three Great Modern Men, Aspects of Religion, Canadian Studies 1600-1867, Canadian Studies 1867-1900); Behavioural Sciences (Self-Realization, Fundamentals of Social Relations, Social Psychology, The Family); Natural Sciences (Role of Water in Man's Environment, Air and Environment, Man and Energy, Man and Matter).

Referring to regulations regarding these courses, the college reported that of the twelve credit hours required for general education, the student must obtain a minimum of three credit hours in each of the above areas.

Institutes of technology. Both institutes of technology indicated that they are thinking in terms of expanding their general education offerings. One institute reported that a recent survey of its faculty suggested that it has talent available to establish a comprehensive general education option program. It indicated that provision would be made in the future for general education courses as options in the second year of the technology program and in the pre-technology year. The other institute stated that it has adopted the position that the students and staff should decide the role of general education in the curriculum. The administration is prepared to accept up to 25 percent of general education subjects if the students, staff, and advisory committees recommend such an inclusion. There will be provision for more general education in the curriculum review presently underway.

Agricultural and vocational colleges. The two agricultural and vocational colleges which replied to this question gave very brief indications of future expansion of general education. One reported that



it planned to establish programs in continuing education, but gave no details. The other college stated that it was planning new residential facilities in which attention was being given to providing spacial and material situations which will facilitate a broader range of student experiences.

Private church-related colleges. An interesting contrast was provided in the replies received from the church-related colleges with respect to their plans for future provision of general education. One college reported that it hoped to expand its offerings of first-year university courses and eventually provide a second-year university level program. Another declared its aim of eventually becoming a three and four-year degree-granting liberal arts college. The third institution stated that it planned to restructure

the administration to provide much larger financial and human resources for informal programs such as experimentation in teaching non-credit courses; spending part of the school year in surroundings more conducive to stimulating the senses (Rockies, lakeshores); providing activities (dinners, night-club type programs, sports and recreation) typical of French Canadian society.

Summary. Answers to Question 4 provided evidence of increasing interest in general education in the institutions surveyed. All indicated that they had definite intentions to expand their offerings in this area. Perhaps the clearest example of increased awareness of the importance of general education was provided by the public college which stated that it plans to introduce compulsory, specially devised general education courses in 1970-71. It is also significant that both institutes of technology have plans to implement general education options in the near future.



### Question 5

The fifth and final question on the General Education Questionnaire reads as follows: What are or have been the problems associated with establishing general education courses, activities, et cetera in your institution?

Public colleges. In reply to this question a variety of problems were reported by the different public colleges. One institution had experienced difficulty in having the Alberta Colleges Commission approve of its wish to establish a general university transfer program. Two colleges mentioned the restrictions imposed by universities with respect to developing courses that would be acceptable for transfer credit purposes. Only one college reported shortage of funds as a problem in establishing programs which could not be financially self-sustaining from the outset. The same institution stated that lack of public awareness of both the services of the college and the benefits of general education were other problems in that particular service area. Two colleges reported that student resistance to courses not immediately associated with their vocational ambitions was a problem. The college which plans to introduce special courses in general education in 1970-71 reported that it had experienced student resentment about the compulsory nature of the proposed courses. The same institution stated that it had also experienced some problems with the faculty in regard to establishing specific general education courses. These problems were:

1. Resistance to the idea of formalizing educational concepts which faculty members felt they had already been incorporating, on an informal basis, in their own courses
2. Loss of the peripheral elective courses due to replacement



by general education courses

3. Finding enough adequately trained staff (with a sufficiently interdisciplinary background) to pilot the courses

4. Doubts that the "team-teaching" approach to be employed in these courses was the best method of achieving the goals of general education.

Institutes of technology. Both institutes of technology reported similar problems in establishing general education courses: (1) a high degree of specialization required by technical training, (2) a limited amount of time available, (3) a technically-oriented faculty, and (4) a vocationally-oriented student body. One institute stated that until recently there had been little student demand for general education, and that in the past activities like theatre groups, drama clubs, music appreciation, and debating had lapsed because of lack of student interest.

Agricultural and vocational colleges. The two agricultural and vocational colleges which replied to this question both stated that staff limitations was a continuing problem. One college pointed out that its programs are occupationally oriented and that it is "painfully aware of an imbalance between general education and occupational education." This imbalance was attributed to shortage of time, limitations of staff, and low student population.

Private church-related colleges. One of the private colleges did not reply to this question. Of the other two one reported that in the past it had been primarily concerned with providing preliminary training for church-work professions. Only recently had it expanded its objectives to include general education for other vocations or professions. Consequently, low student population was considered to be the main



limiting factor. The third college stated that

the main difficulty is the dulling of the senses and of the mind by the high school systems. Students coming to college for the first time are motivated by a desire to "get it over with" and get a diploma or degree rather than a vibrant education.

Summary. In general, the replies to Question 5 indicate that the institutions experienced four broad types of problems in attempting to provide general education: (1) student disinterest, (2) faculty resistance, (3) administrative difficulties, and (4) outside control. These problems are similar to those described by Thornton (1956:126-28) and reviewed earlier in pages 16-17 of this report. Within these general problems more specific difficulties were apparent which were associated with individual characteristics of the institutions.

#### Overview of the Findings

In summary it can be said that all of the institutions which participated in the general education survey indicated that they considered general education to be part of their present educational offerings. However, considerable difference of opinion as to the meaning and objectives of such education was apparent in the replies received. It appeared that general education was being provided mainly through informal activities rather than through formal courses on the curriculum. Most institutions were relying on academic and vocational courses to provide general education, and only one had developed specially devised courses to any marked degree. These courses would be offered for the first time in 1970-71. Though there was evidence of increasing interest in general education among the institutions, it was also apparent that academic and vocational education received much more emphasis.

More detailed conclusions and implications based on the findings



reported above are presented in Chapter 5. In addition, the results of the Delphi study are integrated at that time with the findings reported here.

### DELPHI STUDY

The report turns now to the data derived from the Delphi study into future problems relevant to general education. The analysis begins with a description of the population, then considers the statements of future problems made by respondents in reply to the first questionnaire. Following this a summary of opinions on the desirability of the contents of the statements is presented. In the next section a comparison of the results from the second and fourth questionnaires is made in order to ascertain the extent to which respondents changed their opinions between these two rounds. This analysis considers respondents both as individuals and as a group. The chapter concludes with an examination of the predictions made in the fourth questionnaire by various sub-groups of the population divided according to the variables of age, highest academic qualification, and field of work.

#### Description of the Population

In Chapter 3 a detailed description was given of the various areas from which respondents were selected to participate in the study. Of the sixty-one persons originally contacted forty-nine (80 percent) returned the personal data sheets on which three items of information were requested: age, time in present position, and highest academic qualification. The respondents' positions were not requested as these were already known to the researcher.



Age. Table 11 shows that 35 percent of the respondents were between thirty-five and forty-four years of age, while 22 percent fell in each of the two ten year brackets on either side of this category. The remainder were rather unevenly distributed with 2 percent (one respondent) being less than twenty-five years of age and 14 percent reporting ages of fifty-five years or more. Two respondents (4 percent) did not reply to this item.

Highest academic qualification. The majority of respondents (63 percent) had at least one graduate degree (see Table 12). Twenty-six percent of the total group held a PhD and 37 percent some other graduate degree. A further 16 percent reported that they possessed a bachelor's degree. Of the remainder 14 percent had some post-secondary education, and 6 percent stated that their highest academic training was at the secondary level.

Position. The respondents tended to hold executive positions in education, government, and private business. Table 13 shows that 45 percent were employed in various capacities in education and 22 percent in government. The remainder held positions in business, private agencies, as a social worker, a church minister, a director of a professional theatre group, and a city alderman. Two respondents (4 percent) did not reply to the item requesting the number of years they had spent in their present position. However, slightly more than half reported that they had been in office for three years or less, and 31 percent stated that they had held their present position for ten years or more. The latter group was made up entirely of university professors, heads of government departments, and executives in private business. The most prominent single occupation was that of university professor which constituted 22



Table 11  
Distribution of Respondents by Number and Percentage According to Age Category

Younger than 25	Age category					Total
	25-34	35-44	45-54	55 and over	No reply	
1 (2.0%)	11 (22.4%)	17 (34.7%)	11 (22.4%)	7 (14.3%)	2 (4.1%)	49 (100.0%)

Table 12  
Distribution of Respondents by Number and Percentage According to Highest Academic Qualification

Highest academic qualification					
Secondary	Some post- secondary	Bachelor's degree	Graduate degree other than PhD	PhD	Total
3 (6.1%)	7 (14.3%)	8 (16.3%)	18 (36.7%)	13 (26.5%)	49 (100.0%)



Table 13

Distribution of Respondents by Position  
and Time in That Position

Position	Time in position in complete years						Total
	0-1	2-3	4-5	6-9	10 and over	No reply	
Head of university department	1	1		1			3 ( 6.1%)
University professor	3	1	1	1	5		11 (22.4%)
Educational administrator	2	5					7 (14.3%)
Student in executive position in student affairs	1						1 ( 2.0%)
Head of government department	1	2	1		3		7 (14.3%)
Executive position in government	1	2		1			4 ( 8.2%)
Executive position in private agency	1	1					2 ( 4.1%)
Executive position in private business	1				7		8 (16.3%)
Social worker		1					1 ( 2.0%)
Church minister				1			1 ( 2.0%)
Director of professional theatre group			1				1 ( 2.0%)
City alderman	1						1 ( 2.0%)
(No reply)					2	2 ( 4.1%)	
Totals	12	14	2	4	15	2	49
	(24.5%)	(28.6%)	(4.2%)	(8.2%)	(30.6%)	(4.1%)	(100.0%)



percent of the whole. Next came executive positions in private business (16 percent), and this was followed by educational administration and headships of government departments (14 percent in each).

Sex. The majority of respondents were males. Of the sixty-one persons in the original population, fifty-seven were males and four were females. The number and percentage of respondents by sex who replied is shown in the following tabulation:

	<u>Males</u>	<u>Females</u>	<u>Total</u>
First questionnaire	52 (94.5%)	3 (5.5%)	55 (100.0%)
Second questionnaire	44 (93.6%)	3 (6.4%)	47 (100.0%)
Third questionnaire	41 (93.2%)	3 (6.8%)	44 (100.0%)
Fourth questionnaire	43 (95.5%)	2 (4.5%)	45 (100.0%)

#### Summary of Substantive Findings

The report turns now to the substantive findings of the study. In order to facilitate the reporting of data, details of the results of all four questionnaires are presented in Table 42, which, because of its length and complexity, is placed in Appendix D. The separate items of information contained in this table are as follows:

1. The statements of problems facing Alberta society during the next thirty years, as identified by respondents in the first questionnaire
2. The percentage frequencies (from second-questionnaire data) occurring in the various response categories under probable date of occurrence
3. The reasons (from third-questionnaire data) submitted by respondents for "early" and "late/never" predictions made in reply to the second questionnaire
4. The percentage frequencies (from fourth-questionnaire data)



occurring in the various response categories under probable date of occurrence

5. The time periods (data from the second and fourth questionnaires) by which 50 percent of the respondents had indicated that the problem or development would be clearly recognized by a majority of those affected by it. (The "perpetual problem" category is included in the "1970-71" category as perpetual problems can also be regarded as present problems. The time period is indicated by an asterisk)

6. The percentage frequencies (data from the second and fourth questionnaires) occurring in the three response categories under degree of competence

7. The total degree of competence (data from the second and fourth questionnaires) of respondents for an individual statement expressed as a percentage of their possible degree of competence for that statement.

In addition, two other details concerning Table 42 should be noted:

1. The N associated with each statement is given for both the second and fourth questionnaires, but since not all respondents replied to every statement, the N varies throughout.

2. The percentage frequencies reported under degree of competence do not always total 100 percent because respondents after making a prediction occasionally failed to indicate a degree of competence. In these cases they were allocated zero competence and percentage frequencies and total percentage competence were calculated on the N shown for that statement.

The data presented in Table 42 are discussed in more detail in



the following pages, beginning with an examination of the statements of future problems.

#### Statements of Future Problems

As reported in Chapter 3 a total of 232 statements were initially received, but many were found to be similar. By matching key elements the total number was substantially reduced to a final list of eighty. Certain relationships were found between many of the problems identified, and on the basis of this association the statements were grouped into eighteen sets.

For purposes of analysis each set of statements is shown below in a separate table. These tables (numbers 14 to 31) are subsections of Table 42 in Appendix D and contain essential data relating to the respondents' predictions.

Each table presents the percentage frequencies which occurred in the various response categories under probable date of occurrence for the first prediction (second questionnaire) and for the second prediction (fourth questionnaire). The latter prediction was made after considering reasons submitted in support of the first prediction.

The tables also show the time periods by which 50 percent of the respondents had made their predictions, "perpetual problem" responses being included with "1970-71" responses. This statistic represents the "break-even" period, that is, the period by which there is an equal expectation that the problem will be recognized before or after it.

Another item contained in the tables is the respondents' total percentage competence for each of the two predictions. The reason for including this statistic is that it indicates the respondents' self-appraised competence in making a prediction concerning an individual



statement. It was obtained by expressing the respondents' total degree of competence score as a percentage of their possible degree of competence score for a given statement.

Leisure activities. Statements in the first set, shown in Table 14, are concerned with difficulties likely to face Alberta society as a result of increasing leisure time. Problems mentioned relate to abuse of the physical environment and to difficulties of personal adjustment to additional free time. In the first round of predictions more than 30 percent of the respondents indicated that finding ways for the creative and meaningful use of increased leisure time is a "perpetual problem." However, in the second round the proportion reduced to 22 percent, while increased percentages in the "1970-71" and "1972-75" categories suggested a tendency for this statement to be regarded as a problem of the present or near future. Twenty-one percent of the respondents indicated "never" as their first prediction concerning the problem of increased leisure time placing a potentially disastrous demand on physical and natural resources, but only 11 percent were of this opinion in the second round of predictions.

In general, the majority view was that problems in this set would become significant during the next ten to fifteen years. These predictions were associated with relatively high percentage competence of between 69 and 73 percent.

Fragmentation of society. In the second set of statements (see Table 15) respondents identified problems which may lead to the fragmentation of society. The problems mentioned are concerned with elitist policies in education, communication difficulties, societal deviancy, and stratification of society. Lack of agreement as to the likelihood of serious problems arising from the development of elitist



Table 14

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Leisure Activities

Statement	N	Probable date of occurrence				Total <sup>c</sup> com- petence %				
		70- 71	72- 75	76- 80	81- 85					
1 <sup>a</sup>	47	* <sup>b</sup>	4.3	17.0	21.3	14.9	6.4	4.3	31.9	73.0
	45	13.3	31.1	*	8.9	8.9	6.7	8.9	22.2	72.6
2	47	4.3	6.4	25.5	21.3	10.6	*	21.3	10.6	68.8
	44	15.9	20.5	13.6	11.4	15.9	*	11.4	11.4	70.5
Increased leisure time placing a potentially disastrous demand on physical and natural resources										



Table 14 (continued)

Statement	Prediction no.	N	Probable date of occurrence				Total competence %					
			70-71	72-75	76-80	81-85						
Difficulty for many of changing from the puritan work ethic to an awareness of the virtues of leisure activities	1	46	*	8.7	19.6	15.2	17.4	10.9	4.3	23.9	71.7	
	2	44		13.6	15.9	25.0	*	13.6	9.1	6.8	15.9	70.5

<sup>a</sup>Prediction made after considering reasons submitted for the first prediction

<sup>b</sup>Indicates time period by which 50 percent of respondents had made their predictions (perpetual problem included in 1970-71)

<sup>c</sup>Respondents' total degree of competence/respondents' total possible degree of competence x 100



policies in education was shown by frequencies of more than 20 percent in the "never" category for both statements dealing with this matter. Communication difficulty between various levels of society and between government and large organizations was seen as a "perpetual problem" by 41 percent of the respondents in the first round of predictions, but this frequency reduced to 25 percent in the second round. The trend for persons to elect to "drop-out" of society also was regarded as a "perpetual problem" by a considerable proportion of respondents in both rounds of predictions (36 percent and 27 percent respectively).

In the majority opinion problems of societal deviancy and communication difficulty would be significant in 1970-71, and the other problems in this set would reach obvious proportions by 1980. The percentage competence for the predictions ranged from 65 to 79 percent.

The individual in society. Statements which express concern about the reduced importance of the individual in the face of societal demands and technological change are shown in Table 16. One of the most noticeable features regarding the predictions for this set of statements was the lack of agreement which persisted concerning the likelihood of reduced opportunity in the future for "meaningful" moral-ethical decision-making. Twenty-nine percent of the respondents indicated "never" as their first prediction for this statement and 27 percent held this view in the second round of predictions.

The majority opinion concerning these statements was that they would become significant during the present decade. The percentage competence associated with the predictions ranged from 67 to 75 percent.

Societal change: urban and rural. Problems associated with changes in urban and rural environments are contained in the statements



Table 15

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Fragmentation of Society

Statement	Predic-tion no.	N	Probable date of occurrence						Total competence %
			70-71	72-75	76-80	81-85	Later	Never	
The deliberate redevelopment of selective and elitist policies in education	1	44	2.3	25.0	11.4	9.1	6.8	25.0	20.5
	2	44	6.8	25.0	20.5	6.8	13.6	20.5	6.8
Elitist and closed-door policies in education producing increased stratification of society and societal unrest	1	44	11.4	11.4	18.2	4.5	9.1	27.3	18.2
	2	44	11.4	13.6	18.2	*	6.8	31.8	11.4
Communication difficulty between the various stratas of society and between government and large organizations	1	44	*	27.3	15.9	4.5	9.1	0.0	2.3
	2	44	31.8	22.7	11.4	4.5	0.0	4.5	25.0



Table 15 (continued)

Statement	Prediction no.	N	Probable date of occurrence				Total competence %				
			70-71	72-75	76-80	81-85					
Persons electing to "drop-out" of society	1	45	*	28.9	22.2	6.7	2.2	0.0	4.4	35.6	67.4
	2	44	34.1	15.9	4.5	2.3	4.5	11.4	27.3	71.2	
A changing corporate pyramid intensifying the differences between managers, technical specialists, and others	1	43	2.3	25.6	*	23.3	7.0	4.7	16.3	20.9	68.2
	2	44	6.8	15.9	22.7	6.8	9.1	27.3	11.4		68.9



Table 16

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with the Individual in Society

Statement	Prediction no.	N	Probable date of occurrence				Total competence %
			70-71	72-75	76-80	81-85	
Loss of individuality, privacy, and motivation through manipulation of the individual as a number rather than a person, and for economic rather than humane reasons	1	46	21.7	21.7	23.9	6.5	6.5
	2	45	17.8	20.0	20.0	13.3	4.4
Convincing workers, at all levels, of their moral and social responsibility to produce	1	46	13.0	10.9	13.0	6.5	4.3
	2	45	6.7	11.1	31.1	*	8.9
Glorification of the individual downgraded to emphasis on group needs	1	45	8.9	13.3	13.3	8.9	11.1
	2	45	11.1	22.2	11.1	4.4	15.6



Table 16 (continued)

Statement	Prediction no.	N	Probable date of occurrence					Total comp- etence %	
			70- 71	72- 75	76- 80	81- 85	Later	Never	
Reduced opportunity for "meaningful" moral-ethical decision-making	1	45	13.3	13.3	6.7	4.4	8.9	28.9	24.4
	2	45	17.8	11.1	22.2	4.4	4.4	26.7	13.3



presented in Table 17. All respondents in both rounds of predictions were in agreement that increasing urbanization will be a problem, and the majority indicated that it would be clearly recognized as such by 1975. On the rural scene, 47 percent of the respondents in both rounds predicted that a technical-business approach to farm operation would be a significant development in the period 1972-75. Very few regarded this as a "perpetual problem." Less agreement prevailed concerning the problem of inequality of distribution of goods and services, as shown by a frequency of 20 percent in the "never" category for this statement in both rounds of predictions.

The majority opinion concerning these statements was that they will all be significant by 1975. The predictions were associated with percentage competence ranging from 63 to 78 percent, highest competence being associated with the problem of increasing urbanization.

Societal change: general. Further statements concerned with societal change are shown in Table 18. These statements refer to problems of insecurity, imbalance, and irrationality which result from change. A noteworthy difference between the first and second rounds of predictions was the increased percentage of respondents in the second round who indicated "never" as their prediction for "increased problem solving through short-run physical solutions." This frequency increased from 5 percent in the first round of predictions to 23 percent in the second. It is possible that the "late/never" reason shown for this statement in Table 42 (see Statement 19, Appendix D, page 226) contributed significantly to this change. This reason states that "there is no such thing as 'short-run physical solutions' to historic socio-economic problems. Such attempts merely exemplify the problem."



Table 17

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence  
for Statements Concerned with Societal Change: Urban and Rural

Statement	Prediction no.	N	Probable date of occurrence				Total competence %			
			70-71	72-75	76-80	81-85				
Increasing urbanization creating undesirable social pressures through congestion, disparity in standards, and changing life styles	1	45	28.9*	26.7	17.8	15.6	2.2	0.0	8.9	78.5
	2	44	40.9	34.1*	13.6	9.1	0.0	0.0	2.3	78.8
Increasing technical-business approach to farm operation	1	45	28.9	46.7	13.3	4.4	0.0	4.4	2.2	63.0
	2	43	23.3	46.5*	14.0	7.0	0.0	9.3	0.0	64.3
Increasing inequality of distribution of goods and services	1	46	17.4	10.9	19.6	4.3	0.0	19.6	28.3	65.9
	2	44	18.2	20.5*	9.1	4.5	11.4	20.5	15.9	66.7



Table 18

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Societal Change: General

Statement	N	Probable date of occurrence					Total competence %
		70-71	72-75	76-80	81-85	Later	
Insecurity in people produced by continually making existing environments obsolete	1 44	11.4 *	22.7 *	9.1 22.7	13.6 4.5	11.4 9.1	6.8 13.6
	2 44	6.8 *	20.5 *				
Increasing disparity between the observable function of institutions and their cultural meaning	1 45	22.2 *	20.0 18.2	4.4 9.1	4.4 9.1	4.4 11.4	4.4 9.1
	2 44	25.0 *					
Conflict between institutions and rapid technological change	1 42	28.6 18.6	33.3 25.6	4.8 7.0	0.0 7.0	4.8 14.0	23.8 7.0
	2 43		*				



Table 18 (continued)

Statement	Prediction no.	N	Probable date of occurrence				Total competence %
			70-71	72-75	76-80	81-85	
Increased problem solving through short-run physical solutions	1	43	25.6	20.9	20.9	0.0	4.7
	2	43	14.0	11.6	11.6	7.0	9.3
Shortage of skilled personnel in rapidly expanding technological and automated fields, and a surplus of unskilled workers	1	47	34.0	29.8	12.8	6.4	4.3
	2	45	28.9	28.9	11.1	6.7	4.4
"Women's emancipation" from the home	1	45	13.3	15.6	* 17.8	13.3	11.1
	2	44	27.3	20.5	* 13.6	4.5	15.9



In the majority view the problems in this set would become significant during the next ten years. Percentage competence associated with the predictions ranged from 64 to 81 percent. A relatively large decrease in competence (from 81 to 67 percent) occurred between the first and second predictions concerning "conflict between institutions and rapid technological change." A possible explanation for this reduced competence is that the reasons (see statement 18, Appendix D, page 226) which intervened between the two predictions introduced ideas which many respondents had not previously considered. This added information could have reduced their confidence in their ability to make a prediction about this statement.

Political power distribution. In the next set of statements, shown in Table 19, the emphasis moves from societal concerns to problems with definite political overtones. These statements proved to be somewhat controversial. Foreign domination of Canada's natural resources was viewed as a "perpetual problem" by 27 percent of the respondents in the first round of predictions, but this frequency decreased to 9 percent in the second. Relatively high percentage frequencies (25 and 23 percent) persisted in the "never" category concerning the problem of political power accumulating in the hands of a rotating political-industrial elite. A similar pattern was apparent with respect to the possibility of forming a new kind of regional government for the prairie provinces.

The majority opinion concerning the last statement above moved from 1981-85 in the first round of predictions to "later" in the second. The other statements in the set, according to the majority, would reach significant proportions by 1980. The percentage competence for predictions in this set ranged from 62 to 77 percent.



Table 19

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Political Power Distribution

Statement	Prediction no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
The accumulation of political power in the hands of a rotating political-industrial elite, leading to a modern form of paternal dictatorship	1	43	7.0	14.0	14.0	9.3	4.7	25.6
	2	43	16.3	16.3	9.3	9.3	11.6	63.6
Technological advance producing conflict between professional organizations and methods of rendering services by representatives of the people	1	41	22.0	9.8	19.5	17.1	12.2	12.2
	2	42	9.5	33.3	26.2	4.8	2.4	69.1



Table 19 (continued)

Statement	Prediction no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
The formation of a new kind of regional government for the prairie provinces and their northern extensions	1	45	4.4	6.7	22.2	17.8	17.8	24.4
	2	43	2.3	7.0	16.3	18.6	25.6*	27.9
Unrest over foreign domination of and influence on Canada's natural resources, both human and physical	1	45	*	31.1	11.1	0.0	0.0	26.7
	2	43	30.2	18.6	20.9	11.6	4.7	4.7



Deterioration of the natural environment. In Table 20 statements which express concern about the natural environment are presented. All respondents in both rounds of predictions were in agreement that increasing pollution, burgeoning population, and extraordinary economic demands pose a potential threat to the environment. Thirty-six percent of the respondents in the first prediction and 49 percent in the second indicated that this would be a problem in 1970-71. Opinion concerning the adverse effects of adhering to a management system founded on a market-place economy and private property ownership was less clear cut, but nevertheless the majority saw this as a significant problem by 1980. Percentage competence for this set of statements was comparatively high, ranging from 71 to 80 percent.

Economic concerns. Economic governmental matters constitute the basis of the statements shown in Table 21. The subject of rejecting government "welfare" and "world-aid" policies in favour of private administration of such programs proved to be a controversial item. Fifty-eight percent of the respondents indicated "never" as their first prediction for this statement, and 40 percent were of this opinion in the second round of predictions. Another controversial item was the "disappearance of the sharp distinction between the private sector and the public sector." Twenty percent of the respondents predicted this as significant in 1981-85 in the first response, but only 2 percent indicated this category in the second round of predictions. Moreover, in the second response 14 percent indicated this to be a "perpetual problem" whereas no respondents were of this opinion in the first round of predictions. In contrast to the above statements, relatively little change occurred between predictions concerning the problems of a



Table 20

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence  
for Statements Concerned with Deterioration of the Natural Environment

Statement	Prediction no.	N	Probable date of occurrence					Total competence %	
			70-71	72-75	76-80	81-85	Later		
Maintaining the natural environment in the face of increasing pollution, burgeoning population; and extraordinary economic demands	1	47	36.2	34.0	12.8	4.3	2.1	0.0	10.6
	2	45	48.9	28.9	13.3	2.2	2.2	0.0	4.4
Loss of the natural resource base through continued adherence to a management system founded on a market-place economy and private property ownership	1	44	9.1	6.8	*	27.3	9.1	13.6	18.2
	2	43	25.6	7.0	20.9	*	4.7	16.3	14.0



Table 21

Total Percentage Competence and Percentage Frequencies for Probable Date  
of Occurrence for Statements Concerned with Economic Matters

Statement	Prediction no.	N	Probable date of occurrence				Total competence %
			70-71	72-75	76-80	81-85	
A continuing widening of the material gap between the have and have-not political systems	1	44	20.5	20.5	15.9	9.1	0.0
	2	44	20.5	22.7	13.6	9.1	11.4
Rejection of government "welfare" and "world-aid" policies in favour of private administration of such programs	1	45	2.2	8.9	8.9	2.2	17.8
	2	42	0.0	7.1	14.3	7.1	21.4*



Table 21 (continued)

Statement	N	Probable date of occurrence					Total com- petence %
		70- 71	72- 75	76- 80	81- 85	Later	
Disappearance of the sharp distinction between the private sector and the public sector	1	45	8.9	8.9	15.6	*	28.9
	2	44	13.6	18.2	6.8	2.3	25.0
Controlled productivity, non-productivity	1	42	4.8	7.1	26.2	7.1	28.6
	2	42	7.1	16.7	*	21.4	11.9



widening material gap between the have and have-not political systems.

This was seen by the majority as being a significant problem by 1975.

Percentage competence associated with the predictions for this set of statements ranged from 60 to 74 percent. The lowest competence was expressed for predictions concerning the problem of "controlled productivity/non-productivity."

Medical-social concerns. The next set of statements, shown in Table 22, refer to medical-social concerns. Problems concerned with drug misuse, life-support systems, biomedical engineering, surgical replacement of parts, and computerized medical facilities are raised in this set. With the exception of drug misuse, these problems were associated with low percentage competence ranging from 52 to 62 percent. Relatively high frequencies in the "never" category were recorded for statements concerned with biomedical engineering and the desire for immortality through surgical replacement of parts. The majority opinion was later than 1975 for all of the problems in this set with the exception of drug misuse, which was regarded as being a problem of significant proportions in 1970-71.

Law and order. Problems relating to law and order are raised in the statements shown in Table 23. For both rounds of predictions a relatively high percentage of respondents (31 and 25 percent respectively) indicated that inadequate understanding of human behaviour by law enforcement officers is a "perpetual problem." A similar opinion prevailed concerning the average citizen's failure to recognize that acquiescence to law is preferable to forced compliance. Thirty-eight percent of the respondents saw this as a "perpetual problem" in the first round of predictions, and 33 percent in the second. However, a



Table 22

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Medical-Social Matters

Statement	Prediction no.	N	Probable date of occurrence					Total competence %			
			70-71	72-75	76-80	81-85	Later				
Increasing misuse of all varieties of drugs as more become available and prohibitive measures of control continue to prove inadequate	1	47	*	40.4	36.2	0.0	6.4	0.0	4.3	12.8	66.7
	2	45	28.9	24.4	6.7	6.7	6.7	*	4.4	22.2	64.4
Medical technology contributing to an increase in hereditary diseases by permitting "carriers" to survive and produce off-spring	1	39	2.6	10.3	10.3	7.7	10.3	23.1	35.9	60.0	
	2	43	9.3	9.3	7.0	9.3	25.6	23.3	16.3	55.0	
Deciding when to remove life-supporting aid from a terminal patient to make scarce facilities available to others	1	44	6.8	9.1	*	13.6	18.2	22.7	6.8	22.7	62.1
	2	43	11.6	16.3	16.3	11.6	*	16.3	16.3	11.6	55.9



Table 22 (continued)

Statement	Predic-tion no.	N	Probable date of occurrence						Total com-p- etence %
			70- 71	72- 75	76- 80	81- 85	Later	Never	
The loss of natural selective pressures of differential reproduction through biomedical engineering	1	41	2.4	0.0	14.6	17.1	24.4	31.7	9.8
	2	42	4.8	4.8	11.9	9.5	40.5	19.0	52.4
The attempt to approach immortality by surgical replacement of parts	1	40	7.5	5.0	10.0	12.5	*	32.5	10.0
	2	44	9.1	11.4	15.9	2.3	18.2	31.8	55.9
The replacement of family physicians with technical and computer facilities for screening purposes	1	45	2.2	8.9	28.9	8.9	28.9	17.8	4.4
	2	44	4.5	15.9	20.5	11.4	22.7	22.7	62.2
						*			59.8



Table 23

**Total Percentage Competence and Percentage Frequencies for Probable Date  
of Occurrence for Statements Concerned with Law and Order**

Statement	Prediction no.	N	Probable date of occurrence					Total comp- etence %			
			70-71	72-75	76-80	81-85	Later				
Inadequate understanding of human behaviour by many of those charged with the responsibility of law enforcement	1	45	*	26.7	24.4	6.7	0.0	2.2	8.9	31.1	76.3
	2	44	25.0	25.0	*	9.1	4.5	4.5	6.8	25.0	71.2
Failure of the average citizen to recognize that acquiescence to law is preferable to forced compliance	1	42	*	16.7	11.9	11.9	4.8	2.4	14.3	38.1	71.4
	2	43	11.6	11.6	*	4.7	4.7	7.0	27.9	32.6	69.0



contrasting opinion was apparently held by the 28 percent who indicated "never" as their second prediction for this statement. The majority opinion was that both problems would be readily apparent by 1975. Percentage competence associated with the predictions ranged from 69 to 76 percent.

Humanistic concerns. Statements in the next set (see Table 24) refer to a variety of humanistic concerns. The majority indicated that there was immediate need (1970-71) to make people aware--to the point of concern and participation--of the major human problems of war, poverty, over-population, destruction of the natural environment, exploitation of man by man, and racial prejudice. Thirty-three percent of the respondents in their first prediction saw this need as a "perpetual problem," but only 18 percent were of this opinion in the second round of predictions. Concern for quality in life, confusion over accountability, and respect for diverse human genotypes were seen as "perpetual problems" by a relatively high percentage of respondents in both rounds of predictions. The problems of population control and adjusting to a change from expanding to static world populations were regarded by the majority as likely to become significant in the ten years from 1976 to 1985.

Percentage competence associated with predictions for this set of statements ranged from 62 to 77 percent. A relatively large decrease in competence (74 to 64 percent) occurred between predictions concerning the problem of developing respect for diverse human genotypes.

Communication systems and skills. The statements contained in Table 25 are concerned with communication problems which face the individual at a personal level and as a result of professional and technological development in this field. The need for specific training



Table 24

Total Percentage Competence and Percentage Frequencies for Probable Date  
of Occurrence for Statements Concerned with Humanistic Matters

Statement	Prediction no.	N	Probable date of occurrence				Total competence %
			70-71	72-75	76-80	81-85	
Conflict arising from the search for a mechanism of attaining a population- steady state	1	44	11.4	9.1	*	22.7	15.9
	2	44	13.6	13.6	*	18.2	13.6
Adjusting to a change from expanding to static world populations	1	44	4.5	6.8	13.6	22.7	34.1
	2	43	11.6	11.6	14.0	11.6	*
Concern for quality in life as opposed to quantity in life	1	46	13.0	17.4	15.2	10.9	8.7
	2	44	18.2	6.8	15.9	6.8	25.0
Confusion over accountability to self, peers, charges, and society	1	41	*	24.4	22.0	12.2	2.4
	2	42	28.6	16.7	14.3	0.0	9.5

100  
73.2  
73.2  
70.6

100  
62.1  
63.6  
28.6



Table 24 (continued)

Statement	Prediction no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
Need to make people aware -- to the point of concern and participation -- of major human problems (war, poverty, over-population, destruction of the natural environment, exploitation of man by man, racial prejudice)	1	46	*	39.1	13.0	8.7	4.3	0.0
	2	44	38.6	15.9	13.6	9.1	2.3	2.2
Respect for diverse human genotypes and avoidance of sociological "straitjacketing"	1	41	7.3	12.2	9.8	14.6	19.5	9.8
	2	43	18.6	11.6	16.3	4.7	18.6	7.0



Table 25

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence  
for Statements Concerned With Communication Systems and Skills

Statement	Prediction no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
Individuals being deprived of independent assessment of information through commercial control of mass media, editorializing by mass media, and the development of data banks	1	47	25.5	14.9	23.4	6.4	8.5	14.9
	2	44	22.7	25.0	6.8	2.3	13.6	11.4
The individual's communication skills being threatened by professional dominance of communication	1	43	23.3	11.6	20.9	7.0	9.3	16.3
	2	43	27.9	9.3	14.0	* 7.0	7.0	23.3
Need for specific training in the ability to communicate accurately	1	45	40.0	15.6	4.4	4.4	4.4	0.0
	2	45	31.1	24.4	6.7	4.4	8.9	2.2



Table 25 (continued)

Statement	N	Probable date of occurrence						Total competence %
		70-71	72-75	76-80	81-85	Later	Never	
Inept professional use of technological media as a vehicle of social service	1	42	* 31.0	19.0	16.7	2.4	4.8	7.1 19.0 66.6
	2	43	27.9	16.3	18.6	0.0	9.3	9.3 18.6 63.5
Increased "noise" and decreased content in media	1	42	* 35.7	26.2	9.5	2.4	0.0	11.9 14.3 77.8
	2	43	34.9	18.6	14.0	4.7	7.0	2.3 18.6 68.2
Technological reduction of "meaningful" leisure/creative media	1	40	* 17.5	20.0	15.0	0.0	2.5	22.5 22.5 66.7
	2	43	18.6	23.3	16.3	0.0	11.6	14.0 16.3 64.3



in the ability to communicate accurately and the problem of increased "noise" and decreased content in media were regarded by the majority as being significant concerns in 1970-71. Twenty-two percent of the respondents checked "never" as their first prediction concerning the problem of "meaningful" leisure/creative media, but this percentage reduced to 14 in the second round of predictions. The majority indicated that by 1975 the individual citizen would find it difficult to arrive at independent assessment of information because of commercial control of mass media, editorializing by the media, and the development of data banks.

In general, the majority view was that all problems in this set would reach significant proportions during the next ten years. Percentage competence associated with the predictions ranged from 63 to 81 percent.

Cultural, religious, racial, and secular concerns. In the next set of statements, shown in Table 26, problems dealing with cultural, religious-secular and racial matters are raised. The necessity of developing a concept of rightness and goodness in lieu of traditional norms rooted in traditional religious systems was regarded as a "perpetual problem" by 27 percent of the respondents in the first round of predictions and by 29 percent in the second. The possibility of sectarian education inhibiting the growth of racial and religious tolerance proved to be a controversial item in that 30 percent indicated "never" and 28 percent "perpetual problem" in their first prediction concerning this matter. However, in the second round of predictions these percentages reduced to 26 and 21 respectively while the percentage in the "later" category rose to 23 from only 5 in the first response. These changes resulted in a shift of the majority-opinion for this



Table 26

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence  
for Statements Concerned with Cultural, Religious, Racial and Secular Matters

Statement	Prediction no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
Finding a means of developing in citizens a concept of rightness and goodness in lieu of traditional norms rooted in traditional religious systems which are no longer credible to modern man	1	45	13.3	8.9	* 22.2	8.9	6.7	13.3 26.7 72.6
	2	44	18.2	15.9	11.4 *	15.9	2.3	6.8 29.5 63.6
Conflict between sacred-traditional system of values and secular-hedonistic-humanistic system of values resulting in a breakdown of a public system of higher education	1	44	11.4	15.9	15.9	6.8	6.8	27.3 15.9 66.7
	2	43	9.3	11.6	14.0 *	11.6	7.0	25.6 20.9 62.8
Sectarian education inhibiting the growth of racial and religious tolerance	1	43	18.6	*	7.0	9.3	2.3	4.7 30.2 27.9 66.7
	2	43	16.3	0.0	:	9.3	4.7 *	23.3 25.6 20.9 58.1



Table 26 (continued)

Statement	Predic-tion no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
Revival of interest in religion and a renewal of belief in doctrines	1	41	2.4	7.3	12.2	4.9	* 19.5	34.1 19.5 69.1
	2	44	0.0	9.1	20.5	2.3	27.3 *	27.3 13.6 63.6
Alienation of adult native people because of inadequate and irrelevant educational programs, and because of lack of native involvement in developing and administering such programs	1	44	* 45.5	29.5	6.8	4.5	0.0 2.3	11.4 72.0
	2	45	44.4 *	31.1	11.1	2.2	4.4 0.0	6.7 66.7
Reduction of the number of viable evolutionary alternatives to Western/non-Western society	1	39	15.4	5.1	* 15.4	7.7	10.3 25.6	20.5 52.1
	2	41	9.8	9.8	14.6	9.8 *	17.1 26.8	12.2 61.8



statement from "1972-75" in the first round to "1981-85" in the second. In contrast to this fluctuation, considerable unanimity of opinion was apparent between the two rounds of predictions concerning the problem of alienation of adult native people. The majority considered this to be a problem of significant proportions in 1970-71.

Percentage competence for predictions in this set ranged widely from 52 to 73 percent. An unusually large increase in competence between predictions (52 to 62 percent) was recorded for the problem of "reduction of the number of viable, evolutionary alternatives to Western/non-Western society."

Philosophical concerns. References to the philosophical foundations of Alberta society in the future constitute the content of the statements shown in Table 27. Considerable agreement was apparent concerning the necessity to establish a philosophic basis for further social, cultural, economic, and medical change. The majority viewed this as being an important problem during the present decade. In contrast, the statement "Marx, Hitler, and Russell as prophets being replaced by John Donne, Kropotkin, and Trotter" proved to be controversial. Forty-nine percent of the respondents said "never" for this statement in their first prediction. However, in the second round of predictions this frequency reduced to 32 percent while frequencies in all other categories, except "1976-80," increased. The majority view for both predictions was that this would be a significant matter "later" than 1985. These predictions were associated with low percentage competence in both rounds (55 percent and 51 percent respectively).

Another noticeable change occurred with respect to the majority opinion concerning future reorientation of political parties and religious



Table 27

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Philosophical Matters

Statement	Prediction no.	N	Probable date of occurrence					Total competence %		
			70-71	72-75	76-80	81-85	Later			
Unwarranted faith in technology, experts and statistics	1	42	26.2	11.9	21.4	0.0	7.1	19.0	14.3	69.8
	2	44	25.0	13.6	15.9	4.5	4.5	20.5	15.9	69.7
Establishing a philosophic basis of further social, cultural, economic, and medical change	1	42	9.5	11.9	19.0	16.7	14.3	0.0	28.6	66.7
	2	44	4.5	11.4	15.9	18.2	20.5	2.3	27.3	59.8
Replacement of pseudo-scientific positivism with a new philosophy which re-integrates the sciences and humanities, derives ethical principles and the rule of law from biological data, and recognizes human diversity as being due to the interaction of both genetics and culture	1	42	7.1	2.4	14.3	14.3	*	19.0	26.2	16.7
	2	42	4.8	14.3	14.3	9.5	21.4	19.0	16.7	63.5



Table 27 (continued)

Statement	Prediction no.	N	Probable date of occurrence					Total competence %	
			70-71	72-75	76-80	81-85	Later		
Political parties and religious bodies losing their old orientation (left-right; high-low) and re-interpreting their activities in the light of the new (see #60) philosophy									
1	43	9.3	4.7	9.3	* 20.9	23.3	16.3	16.3	65.9
2	44	9.1	20.5	9.1	9.1	13.6	15.9	22.7	63.6
Marx, Hitler, and Russell as prophets being replaced by John Donne, Kropotkin, and Trotter									
1	35	0.0	2.9	5.7	8.6	* 25.7	48.6	8.6	55.2
2	40	2.5	7.5	2.5	12.5	27.5	32.5	15.0	50.8



bodies. In the first round of predictions this was viewed as being a significant problem by 1985, but in the second round it was regarded as becoming obvious in the period 1972-75. Similarly, the majority view, concerning the replacement of pseudo-scientific positivism moved earlier from 1981-85 in the first round of predictions to 1976-80 in the second.

Adult education. In Table 28 the statements deal specifically with educational matters and focus in particular on adult education. There was little change in percentage frequencies between the two rounds of predictions concerning the following problems: inadequately trained teachers for adult education; the need for special programs for those who have less than "normal" academic backgrounds; and the need for many adults to be re-trained and to up-date their earlier education and skills. All of these problems were regarded by the majority as being significant in 1970-71. Less agreement among respondents was apparent in connection with the extent to which adult education should assume responsibility for programs of general education. In the second round of predictions 28 percent indicated "never" for this statement as compared to 11 percent in the first round.

Percentage competence associated with the predictions concerning these statements was high in comparison to that recorded for previously discussed sets. The range was from 72 to 82 percent.

General education. Statements in Table 29 refer to problems facing general education in the areas of course content and conflict with vocational education. The matter of course content based on needs as opposed to content based on further study of the discipline was viewed by the majority as being significant by 1975, though more than 20 percent in both rounds of predictions indicated this to be a "perpetual



Table 28

Total Percentage Competence and Percentage Frequencies for Probable Date  
of Occurrence for Statements Concerned with Adult Education

Statement	N	Probable date of occurrence					Total competence %
		70-71	72-75	76-80	81-85	Later	
Highly specialized training in the normal period of education making it necessary for adult education to assume increasing responsibility for general education programs	1 46	17.4	23.9	21.7	10.9	4.3	10.9 78.3
	2 44	14.0	14.0	16.3 *	7.0	11.6	27.9 9.3 73.5
Need for programs on how to live in both urban and rural society	1 46	28.3	26.1	17.4	0.0	4.3	6.5 17.4 78.3
	2 43	20.9	34.9 *	11.6	2.3	9.3	11.6 9.3 74.4
Inadequately trained teachers producing alienation in adults being taught	1 43	* 32.6	25.6	4.7	2.3	0.0	7.0 27.9 72.1
	2 42	23.8 *	23.8	4.8	0.0	2.4	14.3 31.0 74.6



Table 28 (continued)

Statement	Prediction no.	N	Probable date of occurrence				Total competence %
			70-71	72-75	76-80	81-85	
Need for special programs for those who have less than "normal" academic backgrounds and who need to develop their employability potential	1	45	*	51.1	20.0	11.1	0.0
	2	42	45.2	33.3	9.5	0.0	0.0
			*				
Need for many adults to be re-trained and to update their earlier education and skills	1	47	*	42.6	19.1	10.6	0.0
	2	44	43.2	29.5	9.1	0.0	0.0
			*				



Table 29

Total Percentage Competence and Percentage Frequencies for Probable Date  
of Occurrence for Statements Concerned with General Education

Statement	Predic-tion no.	N	Probable date of occurrence					Total com-p- etence %	
			70- 71	72- 75	76- 80	81- 85	Later		
<i>The selection of course content based on needs of people, versus the selection of course content as basic to further study of the discipline</i>									
1	47	25.5	* 21.3	27.7	4.3	0.0	0.0	21.3	75.9
2	43	18.6	30.2	16.3	4.7	2.3	4.7	23.3	75.2
<i>Introduction of humanities into technical programs resulting in vocationally ill-prepared and therefore dissatisfied workers</i>									
1	44	13.6	6.8	13.6	2.3	4.5	43.2	15.9	71.2
2	44	4.5	13.6	13.6	2.3	9.1	45.5	11.4	68.9



Table 29 (continued)

Statement	N	Probable date of occurrence						Total competence %
		70-71	72-75	76-80	81-85	Later	Never	
Need for basic education rather than preparation for specific jobs	1	44	*	22.7	18.2	6.8	4.5	2.3
	2	43	30.2	27.9	9.3	7.0	2.3	9.3
Need to educate people to know and live in the north	1	42	14.3	14.3	*	14.3	16.7	16.7
	2	44	9.1	22.7	*	18.2	6.8	13.6
							25.0	25.0
							14.0	14.0
							4.5	4.5
							62.1	62.1
								68.3



problem." Considerable difference of opinion persisted concerning the possible ill-effects of humanities courses on the vocational preparation of students. The highest frequencies for this statement occurred in the "never" category where 43 percent of the respondents placed their first prediction and 45 percent their second. This suggests that though many felt that the introduction of the humanities into technical programs would not necessarily result in ill-prepared workers, more than 50 percent were prepared to consider it as a potentially significant problem. On the subject of educating people to live in the north, 25 percent of the respondents indicated "never" as their second prediction compared to 9 percent in the first round, suggesting an increased tendency to disregard this as a problem likely to become significant in the future.

The percentage competence associated with predictions for all statements in this set ranged from 62 to 76 percent.

Administration, co-ordination and financing of education.

Educational problems related to administrative structures, the co-ordination of programs and institutions, and the financing of educational opportunities are contained in the statements shown in Table 30. There was general agreement that problems exist in connection with administrative structures and co-ordination, but 11 percent of the respondents indicated "never" as their second prediction concerning the matter of making education accountable and able to justify its demands for scarce resources. The need for co-ordination of programs and institutions was regarded as a "perpetual problem" by 20 percent of the respondents in the first round of predictions and by 30 percent in the second.



Table 30

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence  
for Statements Concerned with Administration, Co-ordination, Financing of Education

Statement	Predic-tion no.	N	Probable date of occurrence				Total competence %				
			70-71	72-75	76-80	81-85					
Need to develop new administrative structures, flexible methods of admission and appraisal of students, and suitable operational procedures	1	43	*	39.5	30.2	16.3	0.0	0.0	14.0	79.8	
	2	43	30.2	32.6	*	16.3	2.3	2.3	0.0	16.3	68.9
Need to co-ordinate programs and institutions with each other and with industry, government departments, and community organizations	1	44	*	31.8	27.3	13.6	4.5	0.0	2.3	20.5	79.5
	2	43	34.9	25.6	*	4.7	2.3	2.3	0.0	30.2	76.7
Making education accountable and able to justify its demands for scarce resources	1	43	*	30.2	23.3	14.0	2.3	0.0	2.3	27.9	76.0
	2	44	27.3	25.0	*	11.4	2.3	9.1	11.4	13.6	75.0



The majority view was that all of the above problems would be significant by 1975. The percentage competence associated with the predictions ranged from 69 to 80 percent.

Other educational concerns. The final set of statements, shown in Table 31, are concerned with a variety of educational matters. On the subject of students' desiring more active participation in making programs and institutions relevant to their needs, 53 percent of the respondents in their first prediction stated that this would be a problem in 1970-71. However, this frequency reduced to 29 percent in the second round of predictions and the majority-opinion moved later to 1972-75. A similar change of opinion between predictions occurred with respect to the problem of information retrieval and storage. The difficulty of obtaining well-qualified staff was considered to be a "perpetual problem" by 46 percent of the respondents in the first round of predictions, but this frequency was substantially reduced in the second round to 23 percent. However, the majority in both rounds viewed this as being a significant problem in 1970-71. The statement "technology versus traditional teacher roles" was viewed by the majority in both rounds as being a significant problem by 1975, though 31 percent placed their second prediction in the period 1976-80.

The last two statements in this set proved to be somewhat controversial. With regard to anti-business attitudes among academics, 45 percent of the respondents indicated "never" as their first prediction, and though this frequency reduced in the second round, it was still relatively high at 38 percent. A similar pattern was apparent in the predictions concerning "public protest against students spending more time in educational institutions than in any vocation." Thirty-six



Table 31

Total Percentage Competence and Percentage Frequencies for Probable Date of Occurrence for Statements Concerned with Other Educational Matters

Statement	Predic-tion no.	N	Probable date of occurrence					Total competence %
			70-71	72-75	76-80	81-85	Later	
Increasing student unrest and desire for more active participation in making programs and institutions relevant to their needs	1	45	*	53.3	33.3	2.2	0.0	0.0
	2	44	29.5	38.6	13.6	0.0	4.5	2.3
				*				
Difficulty of coping with expanding knowledge and information retrieval and storage	1	45	40.0	31.1	6.7	4.4	0.0	2.2
	2	44	15.9	25.0	18.2	4.5	15.9	11.4
			*					
Difficulty of obtaining teachers and counsellors who are knowledgeable in their specialities and sensitive to the needs of students and society	1	43	41.9	7.0	4.7	0.0	0.0	46.5
	2	43	41.9	14.0	14.0	4.7	0.0	2.3
			*					



Table 31 (continued)

Statement	N	Probable date of occurrence						Total competence %
		70-71	72-75	76-80	81-85	Later	Never	
Technology versus traditional teacher roles	1	41	12.2	26.8	14.6	12.2	4.9	4.9
	2	42	16.7	21.4	31.0	2.4	7.1	24.4
Anti-business attitudes taught as policy by academics, leading to glorification of intentions without regard for competence	1	40	7.5	22.5	0.0	2.5	0.0	71.5
	2	42	14.3	14.3	11.9	2.4	9.5	69.8
Public protest against students spending more time in educational institutions than in any vocation	1	42	4.8	14.3	16.7	7.1	9.5	68.3
	2	43	16.3	18.6	9.3	2.3	11.6	72.1



percent of the respondents indicated "never" as their first prediction for this statement and 28 percent were of this opinion in the second round.

The percentage competence associated with predictions for all statements in this set ranged from 68 to 80 percent.

#### Opinion Concerning the Content of Statements

Having dealt with predictions and self-appraised degree of competence of respondents with respect to individual statements, the report now considers the opinion of respondents concerning the desirability of the contents of each statement. This information was requested in the second questionnaire where respondents were asked to indicate their reactions to each statement in one of three response categories: desirable, indifferent, and undesirable. The data obtained from this part of the questionnaire are shown in Table 43 in Appendix E, in which the N for each statement is indicated together with the percentage frequencies of responses in each category.

Agreement of 50 percent. The findings presented in Table 43 are further analysed in Table 44 in Appendix F, in which details are shown of the distribution of statements according to categories containing 50 percent or more of the responses. It was found that the majority of respondents regarded twenty-eight of the statements as desirable and thirty-four as undesirable, while only one statement received a frequency of more than 50 percent in the indifferent category. For the remaining seventeen statements no frequency was equal to 50 percent.

Agreement of 80 percent. The implications of examining the statements from the point of view of whether or not they indicate a desirable occurrence will be discussed in Chapter 5. However, for



the moment some general observations on the data presented in Tables 43 and 44 would seem appropriate.

If an 80 percent or more frequency is regarded as a strong convergence of opinion, the respondents could be said to be much more in agreement about what they saw as desirable rather than about what they thought to be undesirable. Of a total of ten statements in the 80 percent or more frequency range, nine were regarded as desirable and one as undesirable.

A general picture constructed from these statements reveals that a majority of respondents indicated that they preferred a future in which quality in life would be placed above quantity in life, and where political power would not be allowed to accumulate in the hands of a rotating political-industrial elite. More than 90 percent were in favour of searching for means to provide for the creative and meaningful use of increased leisure time. A similar percentage indicated approval for upgrading the qualifications of those with less than "normal" academic backgrounds and retraining those whose education or skills needed to be updated. In the area of educational administration more than 90 percent felt that it would be desirable to develop new administrative structures, and 87 percent emphasized the co-ordination of programs and institutions with each other and with industry, government departments, and community organizations. At the personal level the need for specific training in the ability to communicate accurately was approved by 85 percent of the respondents, while on the wider humanistic scene almost 90 percent thought it desirable to make people aware--to the point of concern and participation--of the major human problems of war, poverty, over-population, destruction of the natural environment,



exploitation of man by man, and racial prejudice. Finally, a concern for fundamental issues was expressed by 80 percent of the respondents, who thought it desirable to establish a philosophic basis for further social, cultural, economic, and medical change.

#### Comparison of the Two Rounds of Predictions

Turning from the analysis of individual statements, the report now examines some changes which occurred between the two rounds of predictions (second and fourth questionnaires) when all eighty statements were taken as a group. This description begins by considering changes in predictions of the probable date of occurrence of statements; then compares the two rounds on the basis of the time periods by which 50 percent or more of the respondents had predicted that the problems or developments would be clearly recognized by a majority of people affected by them. The description concludes with an examination of changes which took place between the rounds in the total degree of competence scores expressed as percentages.

Probable date of occurrence. Because the N for each statement varied, depending on the number of respondents who replied to an individual item, the basis of comparison with respect to predictions of the probable date of occurrence was the percentage frequency in each response category. In assessing changes in percentage frequencies, it was decided to regard a 5 percent or more increase or decrease as a significant change in an individual category. This means that a frequency of, for example, 20 percent in a response category for a given statement in the first round would have to appear as either 25 percent (or more) or 15 percent (or less) in the same category for the same statement in the second round in order to be regarded as a



significant change.

In general, then, there was a range of 10 percent in which a percentage frequency in the second round could fall before it was regarded as a significant change. Two exceptions could occur: (1) when a percentage frequency of 100 percent was recorded in either round, and (2) when a percentage frequency of zero was recorded in either round. The first of these possibilities did not occur in the study, and though the second occurred several times, on only three occasions did the resulting change fall between 5 and 10 percent. Such a small number of exceptions was not regarded as significant in relation to the total number of cases.

The outcome of the analysis described above is shown in Table 32. The numbers in individual cells in this table refer to the number of statements in which the percentage frequency in going from the first round to the second increased by 5 percent or more, decreased by 5 percent or more, or changed by less than 5 percent. These numbers expressed as percentages of eighty (the total number of statements) are shown in parentheses.

Inspection of the data in Table 32 reveals that in all but two response categories ("1972-75" and "perpetual problem") the majority of statements showed a percentage frequency change of less than 5 percent between rounds. The response category containing the largest number of "no change" statements was "1981-85" and the one containing the least was "perpetual problem."

The most noticeable change shown by Table 32 is the comparatively large number of statements (thirty-eight) in which the percentage frequency in the "perpetual problem" category decreased by 5 percent or more. This



Table 32

Comparison of Two Rounds of Predictions with Respect to  
Change in Percentage Frequency in a Response Category

	Response category						
	1970-71	1972-75	1976-80	1981-85	Later	Never	Perpetual problem
Percentage frequency increase $\geq 5\%$ in going from the first prediction to the second prediction	15 <sup>a</sup> (18.6)	26 (32.5)	17 (21.2)	5 (6.3)	25 (31.3)	19 (23.7)	8 (10.0)
Percentage frequency change $< 5\%$ in going from the first prediction to the second prediction	45 (56.3)	39 (48.8)	43 (53.8)	59 (73.7)	48 (60.0)	49 (61.3)	34 (42.5)
Percentage frequency decrease $\geq 5\%$ in going from the first prediction to the second prediction	20 (25.0)	15 (18.6)	20 (25.0)	16 (20.0)	7 (8.7)	12 (15.0)	38 (47.5)

<sup>a</sup>Number of statements<sup>b</sup>Number of statements expressed as a percentage of 80



suggests a tendency for respondents who indicated in their first prediction that statements were "perpetual problems" to change their minds in their second prediction. The reverse procedure appeared to occur to a lesser extent in the "later" category where twenty-five statements experienced a percentage frequency increase of 5 percent or more in going from the first round to the second, compared to seven statements in which the percentage frequency decreased by 5 percent or more.

Majority-opinion time period. In general, the above analysis indicated a tendency for the percentage frequencies in individual categories to show little change between the two sets of predictions. In order to further examine the relationship between the two rounds, it was decided to compare them on the basis of the time periods by which 50 percent or more of the respondents had made their predictions. For the purpose of carrying out this analysis the percentage frequency occurring in the "perpetual problem" category was included with the frequency in the "1970-71" category. The cumulative frequencies for each statement were then obtained, and the response category containing the 50 percent cumulative frequency was identified.

This majority-opinion time period, shown in Table 42 in Appendix D by means of an asterisk, was referred to earlier in discussing individual statements of future problems. In the present analysis, however, the statements were examined collectively to see how frequently the majority opinion changed between the two rounds of predictions. It was found that for eleven statements (14 percent) the majority opinion for the second prediction fell earlier than it did for the first. For forty-four statements (55 percent) the time period was the same, and



for the remaining twenty-five statements (31 percent) it came later. Thus, the major trend was for no change in the majority-opinion time period, but when change did occur it was more than twice as frequently to a later period than to an earlier period.

In order to carry this analysis further the number of majority opinions which fell in the various time periods were obtained and percentage frequency distributions derived for both rounds of predictions. The results of this analysis, shown in Table 33, reveal that the greatest difference between the two rounds occurred in the "1970-71" period. Twenty-nine percent of majority opinions in the first round fell in this category compared to only 19 percent in the second. A possible explanation for this difference was provided previously in Table 32 where a marked tendency was noted for respondents to move away from the "perpetual problem" category in their second prediction. As the "perpetual problem" responses are included in the "1970-71" time period in Table 33, this could account for some of the difference between the two rounds in this period.

Further differences, together with some similarities, are more readily apparent when the data is put into graphical form as in Figure 1. Here it can be seen that the distribution for the first prediction is surprisingly smooth and peaked at the "1972-75" interval. The distribution for the second prediction, though also peaked at the "1972-75" period, is somewhat irregular and is noticeably higher in the "1976-80" interval. Both distributions fall rather steeply after the "1976-80" period.

The last observation is clearly shown in Table 34 where the cumulative frequencies of the two sets of data are compared. It can be



Table 33

Percentage Frequency Distribution of Majority-Opinion  
Time Periods in Two Rounds of Predictions

	Time period					
	1970-71	1972-75	1976-80	1981-85	Later	Never
First prediction	28.8	31.3	22.5	11.3	5.0	1.3
Second prediction	18.8	36.3	30.0	6.3	7.5	1.3

Table 34

Cumulative Percentage Frequency Distribution  
of Majority-Opinion Time Periods in  
Two Rounds of Predictions

	Time period					
	1970-71	1972-75	1976-80	1981-85	Later	Never
First prediction	28.8	60.1	82.6	93.9	98.9	100.0
Second prediction	18.8	55.1	85.1	91.4	98.9	100.0



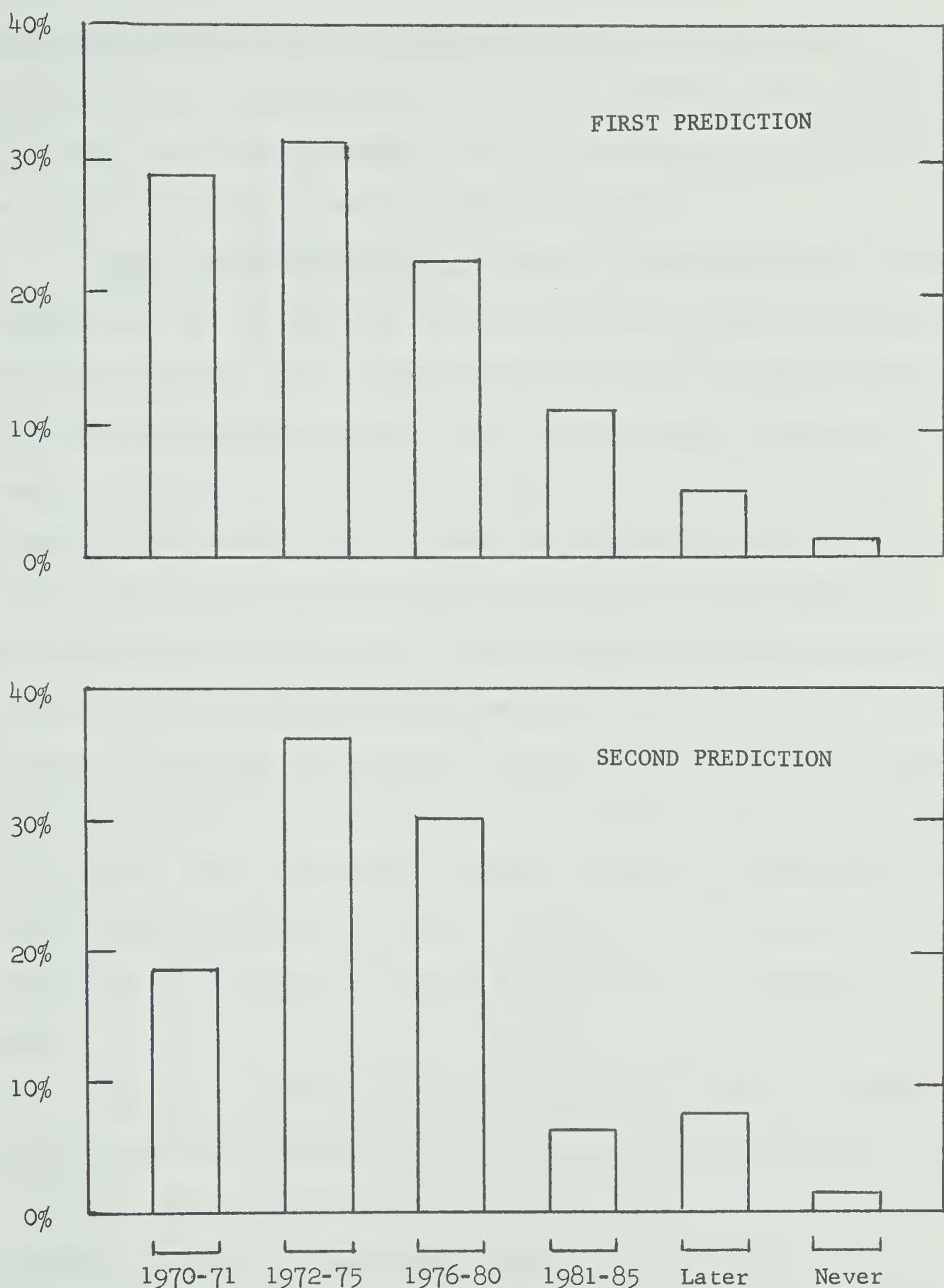


Figure 1

Frequency Distribution of Majority-Opinion  
Time Periods



seen from this table that more than 80 percent of the majority opinions in both rounds are accounted for by 1980--an indication that for most of the time throughout the study respondents, on the average, were looking only about ten years into the future.

Total degree of competence. The two rounds of predictions were compared next on the basis of the total degree of competence expressed for each statement. The comparison was made using the same form of analysis as described previously under probable date of occurrence, namely, by finding the number of statements for which the total percentage competence either increased or decreased by 5 percent or more in going from the first round to the second. On the basis of this analysis it was found that little change had occurred since for fifty-two of the statements (65 percent) there was a less than 5 percent increase or decrease in competence. However, where changes of 5 percent did occur they were almost always in the form of a decrease rather than an increase. Of the remaining statements twenty-six (32 percent of the total) showed a decrease of 5 percent or more in the second prediction, while only two (3 percent) resulted in an increase of 5 percent or more.

In order to further investigate this relationship, frequency distributions were obtained of the total percentage competence for the two parts. These distributions are shown in Figure 2, which clearly indicates the trend for percentage competence to be lower in the second round of predictions than in the first. If the cumulative frequencies for the two rounds are compared (see Figure 3), it is readily apparent that the frequency polygon of second round predictions has a narrower range and steeper gradient than that of the first round



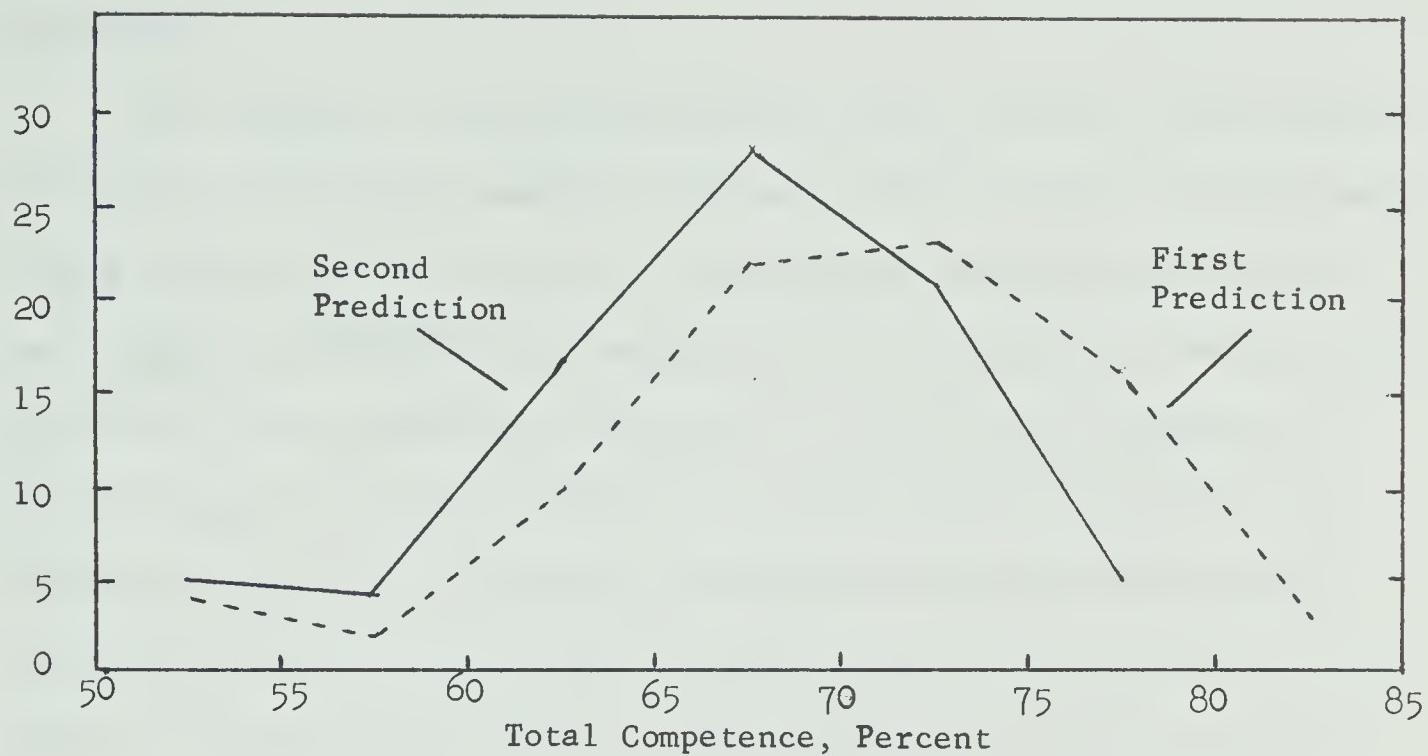


Figure 2

Frequency Polygon of Total Percentage Competence  
for Two Rounds of Predictions

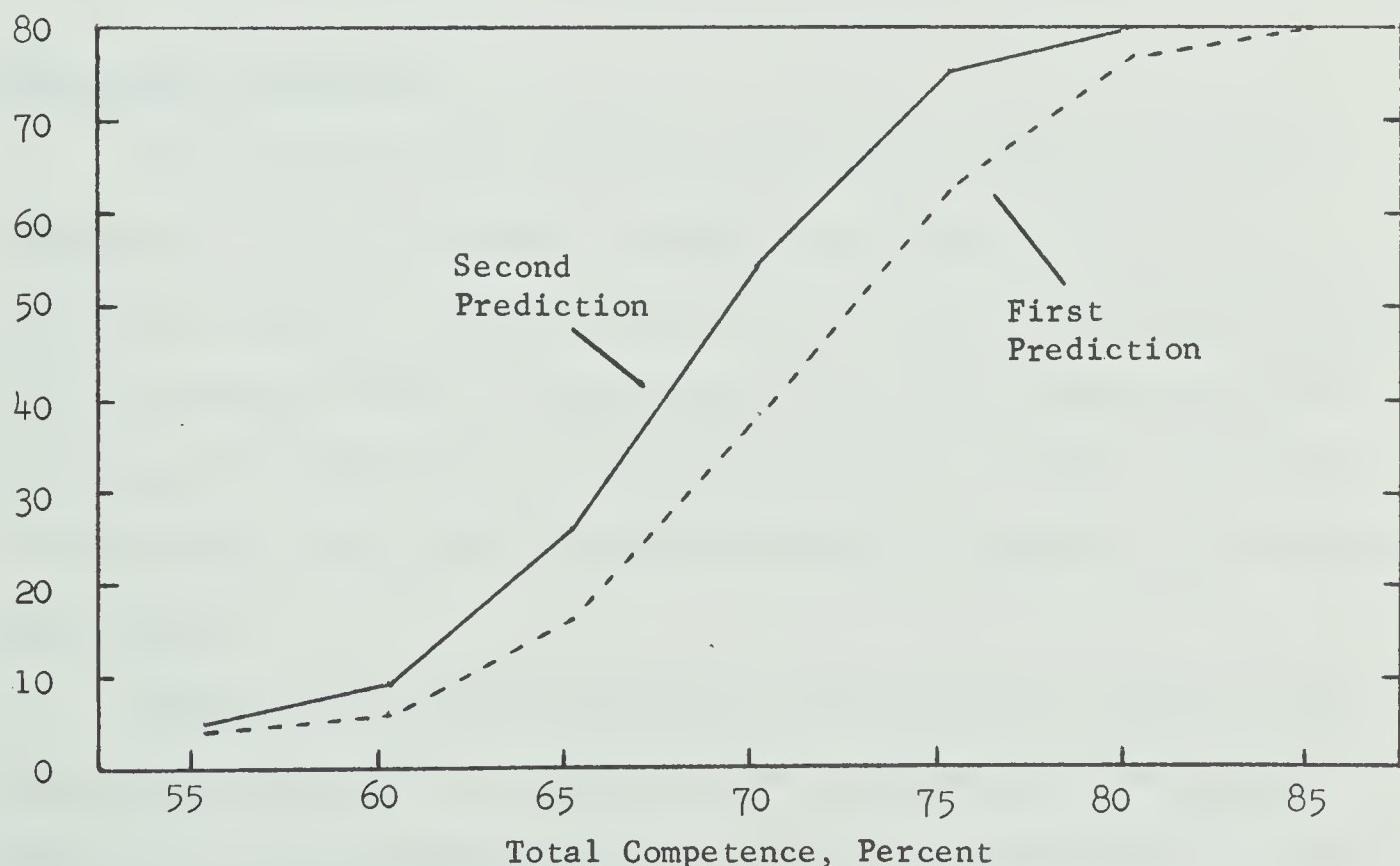


Figure 3

Cumulative Frequency Polygon of Total Percentage Competence  
for Two Rounds of Predictions



predictions.

The results of the above analyses clearly indicate that although two-thirds of the total competence scores in the two parts did not change by more than 5 percent, there was, nevertheless, definite evidence of lower competence scores in the second round of predictions. While it is not possible with confidence to account for this latter phenomenon, it could be argued that the introduction of additional information in the fourth questionnaire, in the form of reasons for earlier predictions, forced respondents to think more carefully about their opinions and made them less confident about their replies, especially where they tended to be most speculative. However, because other variables were involved, including variations in the number of respondents between the two rounds, the above conclusion must be regarded as tentative.

#### Individuals' Responses

The analyses so far presented have been concerned with group responses. It is now proposed to examine some aspects of the way individuals replied. The decision to carry out this investigation arose from an observation made in processing the data that some participants in giving the probable date of occurrence tended to reply consistently in one category, and it was thought appropriate to examine this tendency more closely.

Since seven response categories were provided, a decision was made that a respondent who placed more than one-third of the possible replies in a single category would be regarded as exhibiting a definite tendency to concentrate on that category. Examination of the data from the first round of predictions revealed that twenty-two of the forty-



seven respondents who replied were behaving in this way. For purposes of comparison, this group's responses in the second round were checked for the same kind of behaviour. The details of the examinations of both parts are shown in Table 35.

Several response patterns were revealed by the analysis. Of the twenty-two respondents who had placed more than one-third of their replies in one of the seven response categories in the first round, fifteen continued to place more than one-third of their replies in that category in the second round. Four of the remainder did not reply in the second round, three no longer concentrated on any category, and one changed from concentrating on the "perpetual problem" category to the "1970-71" category. The highest number of responses placed in a single category in the first round was sixty-seven and in the second it was fifty-two. Three respondents in round one placed 50 percent or more of their replies in a single category, and this number increased to seven respondents in round two. There were three respondents who concentrated on two categories in the first set of predictions, and of these three only one continued to concentrate on two categories in the second round. The other two respondents limited their concentration to one category in the second set of predictions.

In order to obtain an over-all comparison of the response categories being concentrated upon by individual respondents in both rounds, frequency distributions of these individuals were made. These distributions are shown in Table 36. It was found that the category most frequently concentrated upon in both rounds was "1970-71." This was followed in round one by the "perpetual problem" category, but in



Table 35

## Response Categories Concentrated on by Certain Individuals in Two Rounds of Predictions

Respondent	Category in which more than one-third of the responses were placed in the first round of predictions	Category in which more than one-third of the responses were placed in the second round of predictions
01	Never (42) <sup>a</sup>	Never (50) <sup>b</sup>
02	1970-71 (28)	
03	1970-71 (35)	1970-71 (36)
04	Perpetual problem (39)	Perpetual problem (46)
05	Perpetual problem (27)	1970-71 (35)
06	1970-71 (35)	1970-71 (34)
07	Perpetual problem (49)	Perpetual problem (52)
08	1970-71 (29)	
09	Perpetual problem (67)	Perpetual problem (35)
10	Never (34)	Did not reply to second round
11	1970-71 (36)	1970-71 (41)
12	Perpetual problem (37)	Perpetual problem (32)
13	1970-71 (28)	Did not reply to second round
14	Perpetual problem (33)	Perpetual problem (34)
	1972-75 (27)	
	1976-80 (28)	1976-80 (41)
15	1972-75 (29)	Did not reply to second round
16	Perpetual problem (38)	
17	1970-71 (27)	Did not reply to second round
18	Never (32)	Never (31)
19	1970-71 (27)	1970-71 (43)
	1972-75 (29)	
20	1970-71 (37)	1970-71 (30)
21	1976-80 (30)	1976-80 (41)
22	1970-71 (40)	1970-71 (38)

<sup>a</sup>The number of responses in the particular category is shown in parentheses

<sup>b</sup>Indicates that responses in the category did not total more than one-third in the second round



Table 36

Frequency Distribution of Respondents Who Placed  
More Than One-Third of Their Responses  
in a Single Response Category

Prediction	Response category							Total
	1970-71	1972-75	1976-80	1981-85	Later	Never	Perpetual problem	
1	10	3	2	0	0	3	7	25
2	9	7	2	0	0	3	6	27



round two by the "1972-75" category. The "perpetual problem" category in the second round was the third most frequently occurring. Identical frequencies for both rounds were obtained in the "1976-80" and "never" categories. There were no respondents in either round who placed more than one-third of their replies in the "1981-85" or "later" categories.

From the above analyses it can be seen that approximately half of the respondents participating in the two rounds concentrated more than one-third of their answers in a single category. Moreover, most of those who did so in either round adhered to this behaviour in the other round by concentrating their answers in the same category. The "1970-71" and "perpetual problem" categories were clearly the ones most frequently treated in this way in round one, whereas in round two the "1970-71", "1972-75", and "perpetual problem" categories were the ones most frequently concentrated upon.

#### Second Round Predictions of Population Sub-Groups

From an examination of both individual and group responses in the two rounds of predictions, the description now centres on the second round alone and examines the predictions of various sub-groups of the population in order to ascertain if significant differences existed between groups with respect to their pattern of predictions for the eighty statements considered together.

The population was divided according to the variables of age, highest academic qualification, and field of work. These variables were selected as the ones which were most likely to produce differences in predictions. The variable of sex was not included because only two



responses from women were received in the second round of predictions, and this was considered to be too small a number on which to base a comparison.

Statistical technique. As the data under analysis were not interval in nature, the chi-square non-parametric test was selected as the statistical technique to be used. Concerning this test, Siegel (1956:175) writes:

When frequencies in discrete categories (either nominal or ordinal) constitute the data of research, the  $\chi^2$  test may be used to determine the significance of the differences among  $k$  independent groups. The  $\chi^2$  test for  $k$  independent samples is a straightforward extension of the  $\chi^2$  test for two independent samples . . . .

Referring to the test for two independent samples, Siegel (1956:104) states:

The hypothesis under test is usually that the two groups differ with respect to some characteristic and therefore with respect to the relative frequency with which group members fall in several categories. To test this hypothesis, we count the number of cases from each group which fall in the various categories, and compare the proportion of cases from one group in the various categories with the proportion of cases from the other group.

By means of the chi-square formula, the value for chi-square may be calculated. In this study the .01 level of significance was the rejection level. If the probability of such a high chi-square was .01 or less, the differences in the frequency of responses were deemed to be significant.

Age. Four groups of responses were used in the analysis for age. Details of the percentage distribution of responses by groups and by response categories are shown in Table 37. In this table the numbers in parentheses are the frequencies of responses when all replies for the entire eighty statements are added together.



Table 37

Percentage Distribution of Responses According  
to Age Categories of Respondents

Response category	Age category <sup>a</sup>				Total (3156)
	A (614) <sup>b</sup>	B (1274)	C (787)	D (481)	
1970-71	14.5%	17.8%	27.7%	18.3%	19.7%
1972-75	23.1	19.4	17.8	17.5	19.4
1976-80	18.4	15.9	10.2	12.0	14.3
1981-85	5.5	5.3	6.7	6.6	5.9
Later	7.2	9.6	12.0	11.8	10.1
Never	16.4	16.2	8.9	15.6	14.3
Perpetual problem	14.8	15.8	16.6	18.0	16.2
Percentage of total responses	19.5	40.3	24.9	15.2	100.0

Chi-square = 99.60      df = 18      p &lt; .001

<sup>a</sup>Group A: Age category 25-34 years  
 Group B: Age category 35-44 years  
 Group C: Age category 45-54 years  
 Group D: Age category > 54 years

<sup>b</sup>Numbers in parentheses are frequencies



The analysis showed that 40 percent of the responses were made by persons between thirty-five and forty-four years of age, 25 percent by respondents aged from forty-five to fifty-four years, 19 percent by respondents between twenty-five and thirty-four years of age, and the remainder (15 percent) by respondents whose ages were greater than fifty-four years. A chi-square of 99.60 with df = 18 and a probability of < .001 indicates that a significant difference existed in the way these groups of responses were distributed in the various response categories.

Inspection of the data reveals that the greatest variation from expected frequencies occurred with responses from participants between forty-five and fifty-four years of age. These respondents placed a substantially higher percentage (28 percent) of their replies in the "1970-71" category than did any of the other groups. The same persons recorded a relatively low percentage of responses in the "1976-80" category (10 percent) and in the "never" category (9 percent). Respondents aged from twenty-five to thirty-four years recorded a noticeably low percentage of responses in the "1970-71" category (14 percent) and in the "later" category (7 percent), but they placed a comparatively high percentage in each of categories "1972-75" (23 percent) and "1976-80" (18 percent). Respondents in the other two age categories distributed their replies only slightly differently from expected frequencies.

Highest academic qualification. When respondents were grouped according to their highest academic qualification, considerable variation became apparent in the pattern of predictions. Table 38 shows that 41 percent of the responses were made by persons whose highest academic qualification was a graduate degree other than a PhD, 28 percent came from participants with a PhD, 13 percent from respondents with no higher



Table 38

Percentage Distribution of Responses According to the  
Highest Academic Qualification of Respondents

Response category	Highest academic qualification <sup>a</sup>					Total
	A (236) <sup>b</sup>	B (384)	C (417)	D (1349)	E (930)	
1970-71	27.5%	22.4%	12.0%	24.5%	13.8%	19.9%
1972-75	13.1	21.6	22.1	18.1	19.3	19.0
1976-80	13.6	22.6	14.9	14.4	10.4	14.2
1981-85	5.1	5.2	4.3	7.6	4.2	5.8
Later	8.9	15.4	14.4	9.1	8.6	10.3
Never	14.0	7.5	16.8	13.1	19.1	14.7
Perpetual problem	17.8	5.2	15.6	13.2	24.5	16.1
Percentage of total responses	7.1	11.6	12.6	40.7	28.0	100.0

Chi-square = 230.12      df = 24      p < .001

<sup>a</sup>Group A: Secondary  
 Group B: Some post-secondary  
 Group C: Bachelor's degree  
 Group D: Graduate degree other than a PhD  
 Group E: PhD

<sup>b</sup>Numbers in parentheses are frequencies



academic qualification than a bachelor's degree, 12 percent from respondents who reported receiving some post-secondary education but did not hold a degree, and 7 percent from persons whose highest academic training was reported as being at the secondary level. A chi-square of 230.12 with  $df = 24$  and a probability of <.001 indicates that significant differences existed in the way these groups of responses were distributed in the various response categories.

Examination of the data reveals that respondents with a PhD qualification placed a comparatively low percentage of their responses in the "1970-71" category (14 percent) and in the "1976-80" category (10 percent), but they recorded a very high percentage in the "perpetual problem" category (24 percent). The percentage of this group's "never" responses (19 percent) was also substantially high. In marked contrast to the PhD participants, respondents with some other graduate degree placed 24 percent of their replies in the "1970-71" category and only 13 percent in the "perpetual problem" category. Respondents whose highest academic qualification was a bachelor's degree had the lowest percentage of replies of any group in the "1970-71" category (12 percent), but a comparatively high percentage (14 percent) of their responses fell in the "later" category. Replies from respondents who possessed some post-secondary education but did not hold a degree were relatively high in the "1976-80" category (23 percent) but very low in the "perpetual problem" category (5 percent). Respondents from this group also recorded a low percentage of replies in the "never" category (7 percent), but had the highest of any group in the "later" category (15 percent). Those respondents who reported that their highest academic training was at the secondary level placed the greatest percentage of responses of any group



in the "1970-71" category (27 percent) and the lowest percentage of responses of any group in the "1972-75" category (13 percent).

Field of work. As the respondents showed significant differences in their predictions when grouped according to age and highest academic qualification, it was decided to continue the analysis further by examining the distribution of responses according to three separate groupings based upon the respondents' fields of work. One such classification investigated was the one described in Chapter 3 (see Tables 3, 4, and 5) and originally used in the selection of the population. The sub-groups of this classification are shown in Table 39 together with the percentage distribution of responses in these groups.

The analysis showed that 48 percent of the responses were made by participants actively and directly involved in the process of education, 32 percent by respondents from government departments and agencies associated government or education, and 20 percent by respondents from other relevant segments of society. A chi-square of 141.4 with  $df = 12$  and a probability of <.001 indicates that significant differences existed in the way these groups of responses were distributed in the various response categories.

Table 39 shows that respondents actively and directly involved in the process of education placed a comparatively low percentage of responses in the "1970-71" category (15 percent) and in the "1976-80" category (10 percent). However, their percentage of responses was substantially high in each of the "never" (18 percent) and "perpetual problem" (22 percent) categories. In contrast, participants from other relevant segments of society recorded comparatively high response percentages in each of the first three response categories (23 percent, 22 percent,



Table 39

Percentage Distribution of Responses According  
to the Respondents' Fields of Work

Response category	Field of work <sup>a</sup>			Total
	A (1674) <sup>b</sup>	B (1103)	C (710)	
1970-71	15.2	20.0	22.6	19.3
1972-75	16.9	18.6	21.7	19.1
1976-80	10.3	12.2	19.5	14.0
1981-85	7.0	5.5	6.6	6.4
Later	10.1	12.4	10.8	11.1
Never	18.3	15.3	10.0	14.4
Perpetual problem	22.1	15.9	8.8	15.6
Percentage of total responses	48.0	31.6	20.4	100.0

Chi-square = 141.4      df = 12      p < .001

<sup>a</sup>Group A: Actively and directly involved in the process of education  
 Group B: Government departments, or agencies associated with government or education  
 Group C: Other relevant segments of society

<sup>b</sup>Numbers in parentheses are frequencies



and 19 percent respectively) but very low percentages in the "never" category (10 percent) and in the "perpetual problem" category (9 percent). In further contrast to the two groups already discussed, replies from respondents in government departments and agencies showed only slight variation from expected frequencies in any of the response categories.

From the above analysis it can be seen that respondents associated with education distributed their responses differently from those who came from other relevant segments of society. To investigate the relationship further, the population was regrouped according to the respondents' association with educational institutions. The resulting classification together with the percentage distribution of responses by groups is shown in Table 40.

The analysis revealed that 36 percent of the responses were made by participants who were employed on a university academic staff, 18 percent by respondents whose work was either at or closely associated with an educational institution other than a university, and 45 percent by respondents whose work lay outside the field of formal education. A chi-square of 207.8 with df=12 and a probability of <001 indicates that significant differences existed in the way these groups of responses were distributed in the various response categories.

Inspection of the data reveals that participants who were employed by universities placed a comparatively low percentage of responses in the "1972-75" (14 percent) and the "1976-80" (8 percent) categories, but a high percentage in the "never" (20 percent) and "perpetual problem" (22 percent) categories. It will be noted that this is a similar pattern to that of respondents who held a PhD, reported in Table 38, and to that of respondents actively and directly involved



Table 40

Percentage Distribution of Responses According  
to the Respondents' Association with  
Educational Institutions

Response category	Association with educational institutions <sup>a</sup>			Total
	A (1263) <sup>b</sup>	B (644)	C (1580)	
1970-71	23.5	15.4	19.0	19.3
1972-75	14.2	24.7	18.3	19.1
1976-80	8.5	16.5	17.1	14.0
1981-85	3.5	10.3	5.5	6.4
Later	8.4	11.7	13.2	11.1
Never	19.9	10.5	13.1	14.5
Perpetual problem	22.1	10.8	13.8	15.6
Percentage of total responses	36.2	18.5	45.3	100.0

Chi-square = 207.8      df = 12      p < .001

<sup>a</sup>Group A: Respondents employed on a university academic staff  
 Group B: Respondents whose work was either at or closely associated  
           with an educational institution other than a university  
 Group C: Respondents whose work lay outside the field of formal  
           education

<sup>b</sup>Numbers in parentheses are frequencies



in the process of education, reported in Table 39. However, when the responses from participants associated with educational institutions other than a university are examined, it can be seen that this group distributed their replies in a noticeably different pattern. In marked contrast to the university people, they placed a high percentage of responses in the "1972-75" (25 percent) and "1976-80" (16 percent) categories, but a quite low percentage in the "perpetual problem" category (11 percent). The responses from the remaining group of participants--those whose field of employment was not directly related to education--showed a much closer approximation to expected frequencies than did those of the other two groups. The greatest variation occurred in the "1976-80" category where a relatively high percentage of responses (17 percent) was recorded.

In a final analysis of replies according to respondents' fields of work, the first two groups in the preceding classification were combined into one to comprise those respondents who were directly employed in some form of educational activity. This group was then compared with the third group of the previous classification, which was made up of respondents whose work lay outside the field of formal education. The percentage distribution of responses by these two groups is shown in Table 41.

Fifty-five percent of the responses in this classification were made by respondents employed in education and 45 percent by those not directly involved in education. A chi-square of 52.73 with  $df = 6$  and a probability of <.001 indicates that there was a significant difference in the way the responses were distributed by the two groups.

Table 41 shows that with this grouping of the population



Table 41

Percentage Distribution of Responses According to  
the Respondents' Employment in Education

Response category	Employment in education <sup>a</sup>		
	A (1907) <sup>b</sup>	B (1580)	Total (3487)
1970-71	20.1	18.4	19.3
1972-75	18.8	19.4	19.1
1976-80	11.1	16.9	14.0
1981-85	6.5	6.2	6.4
Later	9.3	13.0	11.1
Never	16.3	12.7	14.5
Perpetual problem	17.8	13.3	15.6
Percentage of total responses	54.7	45.3	100.0

Chi-square = 52.73      df = 6      p < .001

<sup>a</sup>Group A: Respondents employed in education

Group B: Respondents whose work lay outside the field of formal education

<sup>b</sup>Numbers in parentheses are frequencies



differences had largely disappeared in three of the categories: "1970-71", "1972-75", and "1981-85." The greatest difference existed in the "1976-80" category where respondents from outside of education placed a relatively high percentage of their replies (17 percent) compared to a noticeably low percentage (11 percent) from educators. However, the latter group recorded substantially higher percentages in the "never" and "perpetual problem" categories (16 and 18 percent respectively) than did the non-educators, for whom the distribution was 13 percent in each. A considerable difference between the two groups also existed in the "later" category where educators placed 9 percent of their responses compared to 13 percent by non-educators.



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## Chapter 5

### SUMMARY AND CONCLUSIONS

#### THE PROBLEM

The present era is possibly one of the most critical periods in human experience. In a sense, mankind stands at the threshold of a potentially great transformation in the whole human condition, but paradoxically, the way ahead while tinged with hope is also clouded with uncertainty. For the first time in human history the future of the individual and society has come in large measure within human control, and the idea has arisen that the future is what man determines it to be. But the extraordinary developments in science and technology which have made such a concept tenable have materialized against a background of social unpreparedness for their creative, rather than destructive, use. In the face of such enormous potential for change for good or ill, the need for man to plan the future he desires has suddenly assumed paramount importance.

Among the agencies which must be concerned with planning the future in terms of the long-range consequences of human actions, educational institutions occupy a special place. By their nature they must be concerned with problems and issues pertinent to the needs of the students and society which they serve. But whether they actively participate in determining the characteristics of that society, or merely reflect their social and cultural milieu will, in the years ahead, be determined largely by the extent to which they become involved in the



process of determining the future.

That aspect of education most closely concerned with developing in students social concepts and life styles which will be reflected in future society, is known in the literature as general education. The nature and content of such education as it relates to the idea of alternative futures was the problem with which this study was concerned. The investigation focussed on the Alberta scene, and, as a further delimitation, concentrated on post-secondary, non-university educational institutions. These institutions were selected because of their rapid development in Alberta during the past decade, and because since many are relatively new, they have a unique opportunity to develop their orientation to the future without the encumbrances of tradition or inherited interest groups.

The study examined general education in relation to the likely future of Alberta society during the next thirty years. More specifically, it sought:

1. To survey general education practices in post-secondary, non-university educational institutions in Alberta
2. To identify the major problems facing Alberta society during the next thirty years, the implications of which could constitute the basis of general education curricula in Alberta's post-secondary, non-university educational institutions
3. To establish probable dates by which the problems identified in (2) might reach serious proportions if no corrective measures are taken
4. To examine the effectiveness of a method known as the Delphi technique in forecasting problems relevant to general education.



The above objectives constitute a unique approach to the study of general education. To the best of the writer's knowledge no other study in Canada or elsewhere has linked general education with the concept of alternative futures or used the Delphi forecasting methodology to predict future societal problems relevant to general education in post-secondary institutions. In an era of turbulence and uncertainty about what lies ahead the study therefore assumes a special significance as one attempt to examine the possible role of education in planning a future which will ultimately become a desirable present.

#### GENERAL EDUCATION SURVEY

In order to accomplish the first of the four objectives mentioned above, a survey was made of thirteen Albertan post-secondary, non-university educational institutions. The institutions concerned were: the five public colleges at Medicine Hat, Lethbridge, Calgary, Red Deer, and Grande Prairie; the two institutes of technology at Edmonton and Calgary; the three agricultural and vocational colleges at Olds, Vermilion, and Fairview; and three private church-related colleges (Camrose Lutheran College at Camrose, Concordia Lutheran College at Edmonton, and Collège Saint-Jean at Edmonton).

#### Method

The instrument used in the survey was a General Education Questionnaire prepared by the researcher. It consisted of five questions designed to:

1. Ascertain which institutions considered they were offering general education, and what they understood the term to mean



2. Determine which institutions, if any, had formalized a concept of general education into specific objectives

3. Obtain information on the nature of the institutions' general education offerings in four broad areas--courses, activities, events, and materials

4. Learn to what extent future provision for general education was being considered by the institutions

5. Discover the problems which faced individual institutions in making provision for general education.

The questionnaire was forwarded to the presidents and principals of the institutions concerned, and a one hundred percent return was secured.

### Findings

The results of the general education survey are summarized below according to the five questionnaire items and four institutional groups (public colleges, institutes of technology, agricultural and vocational colleges, and private church-related colleges).

Question 1. All of the public colleges stated that they offered general education only in so far as academic and vocational courses may be considered as general education for students who take them. No specific definitions of the term were provided, but one college stated that the aim of general education was the unification of disparate disciplines and another said that this kind of education seeks to increase a student's sensitivity to life and his environment.

Both institutes of technology reported that they offered general education on a limited basis only. They described it in terms of (1) providing basic knowledge in English, mathematics, and science; (2) giving some background in subjects such as literature and art; and (3) contrib-



utting to the development of an individual student as an informed citizen in the technological age.

All three agricultural and vocational colleges stated that they made some provision for general education. One institution declared that all education is general education, another described it as providing basic knowledge, and the third saw it as education which does not serve a specific occupational objective.

The private colleges all reported that they provided general education opportunities for their students. One stated that this kind of education is associated with a liberal arts curriculum, while the other two defined it in terms of contributing to a student's awareness of self, his environment, and the need for virtue in his personal life.

Question 2. With respect to specific objectives for general education, none of the public colleges reported that they had formulated any as such. All objectives stated were general rather than specific and revealed a variety of opinions based on differing interpretations of what is meant by general education. Three objectives stated were: (1) the establishment of a university transfer program which would permit the enrolment of non-matriculants; (2) meeting the needs and desires of people in the service area; (3) providing a program for those interested in education as an end in itself; and (4) assisting the student to become effective as a person, a member of a family, and as a citizen.

One of the technical institutes reported that it was currently carrying out a curriculum review and that no specific objectives could be given until the review was completed. The other institute stated a general objective only, which referred to preparing students to function effectively in the changing technological age.



Objectives of general education stated by the agricultural and vocational colleges were again general rather than specific. They referred to the upgrading of adults, and to providing a background for making realistic decisions in the areas of communications, occupational objectives, co-operation with others, and use of leisure time.

Basic agreement in principle was apparent in the replies received from the private colleges concerning their general education objectives. These objectives were stated in broad institutional terms and referred to providing opportunities for the spiritual, intellectual, emotional, social, and physical growth of students. The colleges aim to produce students who are aware of their obligations to God and their fellowmen, are humble in their claims to knowledge, and are prepared to become critically involved in building a Canadian culture.

Question 3. In describing their general education offerings most of the public colleges either referred to their regular academic and vocational courses or left this question blank. However, one institution mentioned formal courses in art and music, and another referred to special courses in general education to be introduced in the fall of 1970. These courses are described under Question 4. Activities mentioned as contributing to general education included athletics, a fine arts festival, and various clubs. Materials referred to were books, magazines, recordings and paintings.

As formal offerings in general education, both institutes of technology referred to courses in English, the social sciences, and economics. Art appreciation and art history were mentioned by one institute, and informal courses in learning theories and study methods by the other. Activities and events reported were closed-circuit



television, a film society, weekly meetings on contemporary issues, and visiting speakers and panel discussions.

One of the agricultural and vocational colleges referred to courses in its pre-technology, technology, and adult upgrading programs as general education courses. Another college reported that it offered formal courses in communications, personal development, and business ethics. Among the activities and events described as contributing to general education were residence life, student government, athletics, clubs, luncheons, and literary programs. Materials mentioned were gymnasium and auditorium facilities, and community resources.

The private colleges relied mainly on regular academic courses for formal work in general education. One institution reported specifically devised courses in the fields of art, science, and education, but it was not clear if these were different from the other academic courses in these areas. Informal courses described included sessions on group dynamics, sensitivity training, and off-campus experiences including an outdoors school in the mountains. Activities and events described, in addition to many already mentioned by other institutions, were drama and choral societies, convocations, and T-group and social animation sessions.

Question 4. As far as future provision for general education is concerned, all five public colleges indicated that they intended to extend their general education offerings. More specifically, one college stated that it will introduce an "Arts-Science Diploma Program" in the fall of 1970, which will provide a general education option for students not seeking specific occupational training. An even greater provision for general education in 1970-71 was reported by another college. This offering will be in the form of eight specifically devised courses to be



followed by another eight in 1971-72. The approach will be interdisciplinary and the proposed courses will be offered in the areas of communications, humanities, behavioural sciences, and natural sciences. A total of twelve credit hours will be required for general education, three credit hours to come from each of the above areas.

Both institutes of technology indicated that they are thinking in terms of expanding their general education offerings. One institute stated that provision would be made in the future for general education courses as options in the second year of the technology program and in the pre-technology year. The other institute reported that its administration was prepared to accept up to 25 percent of general education subjects if the students, staff, and advisory committees recommend such an inclusion.

Future provision for general education in one agricultural and vocational college would be in the form of programs in continuing education. Another college reported that it was planning new residential facilities in which spacial and material situations would be provided which would facilitate a broader range of student experiences.

Two of the private colleges indicated that their future expansion would be in terms of providing additional years of university-level education. The other college expressed its intention of experimenting with non-credit courses and developing off-campus experiences.

Question 5. A variety of problems associated with developing general education were reported by the public colleges. Among the difficulties mentioned were: restrictions imposed by universities on transfer courses, shortage of funds, lack of public awareness, student resentment to non-vocational content, faculty resistance to an inter-



disciplinary approach, and the difficulty of finding adequately trained staff--particularly with an interdisciplinary background.

The main problems reported by the institutes of technology arose from the fact that these institutions have traditionally dealt with a vocationally-oriented student body and a technically-oriented staff. In the past general education activities had lapsed through lack of student interest. Similar problems were also reported by the agricultural and vocational colleges, though another limiting factor with these institutions was a low student population.

Small numbers of students was also reported as a difficulty in one of the private colleges. However, another college mentioned a problem not raised by any other institution. It referred to "the dulling of the senses and of the mind by the high school systems" and deplored the fact that students coming to the college for the first time are motivated mainly by a desire to "get it over with"--to acquire a diploma or degree rather than a vibrant education.

#### DELPHI STUDY

The second and major research procedure carried out to accomplish the objectives of the study was a modified Delphi investigation of problems relevant to general education and likely to face Alberta society during the next thirty years.

#### Method

Population. The population for this study consisted of sixty-one respondents--94 percent of whom were male--selected for their recognized expertise in areas related to the individual and social pursuits of man. Forty-seven participants supplied all items of personal data requested,



which revealed that their ages ranged from less than twenty-five years to more than fifty-four with slightly more than one-third falling in the thirty-five to forty-four years range. As a whole, the group had a substantial amount of formal education; 63 percent had at least one graduate degree and 26 percent were PhD's. The majority occupied executive positions in education, government, or private business. Slightly more than half had held their present position for three years or less, and a further 32 percent had been in their current post for ten years or more. The most prominent single occupation was that of university professor.

Instrumentation. Participants were asked to reply to four sequential questionnaires spaced approximately one month apart. The first instrument asked for the identification of problems relevant to general education which would likely face Alberta society during the next thirty years; the second instrument called for opinions of the dates by which the problems would reach such proportions that they would be clearly recognized by a majority of people affected by them. In addition respondents were asked for opinions on the desirability of the statements supplied, and for a self-appraisal of their degree of competence in making a prediction concerning each statement. In the third questionnaire reasons were sought for "early" and "late/never" predictions made in reply to the second questionnaire. These reasons were supplied to all respondents in the fourth questionnaire, who were then asked to reconsider their original opinions in the light of this additional information.

The number of returns received ranged from fifty-five (90 percent) for the first questionnaire to forty-five (74 percent) for the fourth. All data from the second and fourth rounds were transferred to I.B.M. cards for computer processing.



## Findings

The results of the Delphi study are summarized below as findings relating to substantive aspects of the study and findings pertaining to methodological considerations.

Substantive outcome. From a total of 232 statements received in reply to the first questionnaire, a list of eighty was obtained after repetitions and similarities had been accounted for. On the basis of various relationships these statements were grouped into eighteen sets which together covered a wide range of social and educational phenomena. In general, the statements with a social orientation raised problems in the areas of societal change, deterioration of the natural environment, economic inequality and change, human behaviour, and value systems. The statements more specifically relating to education referred to problems of administrative restructuring, increased co-ordination, and adjustments necessitated by future technological developments.

Turning to predictions, it was found that in neither the second nor fourth questionnaires did respondents display a marked measure of agreement in predicting that a particular problem would reach serious or obvious proportions during a time period provided on the response sheet. The usual pattern was for responses to be distributed throughout the categories with concentrations appearing in one or two categories, but on only three occasions (all in the first round of predictions) did they exceed 50 percent in any one category. However, if "perpetual problem" responses are included with "1970-71" responses, a total of twenty-three statements in the first round of predictions and fifteen statements in the second round were regarded by more than 50 percent of the respondents as being serious or obvious problems in 1970-71. Statements in this group included references to problems of societal "drop-outs",



inadequate communication skills, foreign domination of Canada's resources, deterioration of the natural environment, drug misuse, law and order, alienation of native peoples, upgrading and retraining of adults, student desires for participation in making programs and institutions relevant to their needs, expansion of knowledge, shortage of well-trained teachers, and inadequacy of administrative structures in education.

Another way of viewing the predictions is to find the cumulative percentage frequency in each category and thereby identify the period by which 50 percent or more of the respondents were in agreement that the problem would have developed to obvious proportions if no corrective measures were taken. ("Perpetual problems" would again be included in the "1970-71" period). Considered in this light, the data from the first round of predictions reveal that for only sixteen statements was the majority opinion later than 1980. In the second round the number was ten. This indicates that respondents, on the average, were looking approximately ten years into the future with respect to most of the statements. Among the problems for which the majority opinion fell later than 1980 were: increased leisure placing a potentially disastrous demand on physical and natural resources, formation of a new form of regional government for the prairie provinces, implications of biomedical engineering, replacement of the family physician by computer facilities, desire for immortality through the surgical replacement of parts, change from expanding to static world populations, a revival of interest in religion and a renewal of belief in doctrines, and replacement of pseudo-scientific positivism with a new philosophy based on biological data.

In addition to making predictions about the probable date of occurrence of problems, respondents were asked to indicate their opinions,



in the second questionnaire, on the desirability of the contents of each statement. The results reveal that a majority of respondents regarded twenty-eight of the statements as desirable and thirty-four as undesirable, while they expressed indifference to only one. For the remaining seventeen there was no percentage frequency as high as 50 percent in any of the three response categories. For ten of the statements 80 percent or more of the respondents were in agreement on their opinions of the nature of the contents. A synthesis of this opinion would indicate that the respondents looked forward to a society in which equality of opportunity is emphasized; quality of life is placed above quantity in life; leisure is used creatively; communication skills are stressed; concern is shown for major human problems; and a philosophic basis is sought for social, cultural, economic, and medical changes.

Methodological aspects. Having summarized the substantive outcome of the study, it is now appropriate to consider briefly some methodological aspects. In this regard three general findings emerged from a comparison of the results from the two rounds of predictions.

1. With respect to percentage frequencies recorded in individual response categories, it was found that in all but two categories ("1972-75" and "perpetual problem") the majority of statements showed a less than 5 percent change in percentage frequency between the two rounds. However, in the "perpetual problem" category no fewer than thirty-eight statements decreased in percentage frequency by more than 5 percent in the second round, suggesting a tendency for respondents to move away from this category.

2. When the two rounds were compared on the basis of whether or not the majority opinion for the second round fell earlier than that for the first, the results showed that the major trend was for no change, but when change did occur it was more than twice as frequently to a later



period than to an earlier period.

3. In the third comparison the total degree of competence scores indicated by the respondents in the second round were found to be, on the average, lower than the scores obtained in the first round.

When participants were considered individually rather than as a group, certain tendencies in the way they replied were observed. It was found that approximately half of the respondents concentrated more than one-third of their answers in a single category. The frequency was greater than 80 percent for one person in the first round ("perpetual problem" category) while several participants in both rounds placed more than half of their replies in a single category. Moreover, most of those who concentrated their replies in a single category in either round also favoured this category in the other round. The "1970-71" and "perpetual problem" categories were clearly the most frequently treated in this way in round one, whereas in round two the "1970-71", "1972-75", and "perpetual problem" categories were the most frequently concentrated upon.

The final analysis carried out used second round data to ascertain if significant differences existed between various sub-groups of the population with respect to their pattern of predictions for the eighty statements considered together. The population was divided according to the variables of age, highest academic qualification, and field of work. The statistical technique used was the chi-square non-parametric test. It was found that in each case tested significant differences existed between the groups. Some of these differences were as follows:

1. Respondents in the middle-age group (forty-five to fifty-four) placed a much greater proportion of their replies in the "1970-71"



category than did any of the other age groups.

2. Replies from participants with a PhD degree were comparatively low in the "1970-71" category, but high in the "perpetual problem" and "never" categories.

3. Respondents actively and directly involved in the process of education showed a marked contrast to respondents from other relevant segments of society in that while the former placed a high percentage of their replies in the "never" and "perpetual problem" categories, the latter concentrated on the first three time periods from 1970 to 1980.

4. Participants from universities saw a high proportion of the problems as "perpetual" or "never" whereas respondents associated with other educational institutions tended to favour the time periods from 1972 to 1980.

5. When educators were compared with non-educators the greatest difference was found to exist in the "1976-80" category which was favoured proportionally more frequently by non-educators than by educators. The latter, no doubt strongly influenced by the PhD's, showed comparatively high frequencies in the "never" and "perpetual problem" categories.

#### Assessment of the Methodological Technique

Implicit in the foregoing summary of procedure and findings are certain difficulties encountered in the course of carrying out the Delphi study. It is the purpose of the present section to examine some of these difficulties and to suggest modifications which may prove helpful to others who use the technique.

Selection of experts. Any study of the future is faced with the certainty that there can be no such thing as precise knowledge of events or developments which have not yet occurred. The future is unknown and



presumably will remain that way. Any attempt to investigate it must therefore be working at best in the area of opinion. Such opinion is derived partly from fact and partly from judgment or interpretation of facts, but the more it is based on factual knowledge, the more reliable it is likely to be. Hence, one of the key difficulties in conducting a study of this nature is the selecting of expert opinion.

In this study experts were selected on the basis of their reputations as perceived by others. By and large the reputational approach is sound, but, as Helmer (1966:13) points out, the researcher is confronted with two basic difficulties: (1) the fact that a first-rate specialist may not always be good at taking a sufficiently general "systems" view in formulating the problem; and (2) the difficulty of knowing an expert's ability to make reliable predictions. One possible alternative approach is to combine the reputational technique with empirical investigation of the relationship between objective indices (such as professional experience and number of publications) and degree of reliability in making predictions. This would involve both researcher and prospective participant in additional time and effort, but it would have the advantage of giving the researcher a more complete picture of the final panel membership.

Fluctuations in panel membership. A difficulty arising from the fact that the procedure is spread over several rounds is that the same respondents do not necessarily reply to all questions. This fluctuation is very difficult for the researcher to control, but two possibilities that could be investigated would be (1) to have some form of contractual arrangement with the participants, or (2) to have a somewhat captured group such as participants at a conference.



Time lapse. A multiple round procedure also produces the problem that there can be a considerable time lapse between the first and last rounds. In this study it was approximately three and one half months, which may have contributed to some of the fluctuations in panel membership and shifts of opinion which occurred. A tighter organizational structure and research-team approach would help in reducing the time lapse.

Ambiguous statements. One of the most serious problems, and also the most difficult to overcome, is that a variety of meanings can be attributed to the same statement, or even instruction, by different respondents. Such ambiguity is unfortunately somewhat a consequence of conducting the study by mail, since it becomes virtually impossible, without resorting to legalistic phraseology, to achieve a great precision of meaning. One possible way of reducing the ambiguity would be to include an extra round between the first two questionnaires of the present study in which respondents are given an opportunity to reword statements or indicate any difficulty in interpretation before the predictive phase of the study begins.

Number of statements. A source of continual concern to the researcher throughout the study was the demands being made on the time of the respondents, all of whom were voluntary participants. Since the time required was a function of the number of statements contained in the two rounds of predictions, the advantages of limiting this number are apparent. In retrospect the writer wonders whether the objectives of the study may not have been better achieved by more exacting editing of the statements from the first questionnaire. The two chief dangers faced in this regard are possible outright rejection of a potentially significant statement and the watering-down of statements through over-generalization.



Number of respondents. With regard to the number of respondents that should be included in a study of this nature, no precise figure can be given as the membership will be determined to a large extent by the research problem, the availability of experts, and the commitment of respondents to the project. Experience from this study and reports of other experiments would suggest that where a high percentage of returns can be guaranteed a population of thirty would not be too small. On the other hand, it is almost certain that if the number goes beyond sixty the procedure would become unwieldy. If the researcher is supplying the questions, that is, omitting the stage described as the first questionnaire of this study, the findings of Dalkey (1969:412-13) are worth noting. Dalkey found that in a study using almanac-type questions (supplied by the researcher) the mean accuracy of a group response increased as group size increased. The largest group tested consisted of twenty-nine persons.

Respondents' competence. No matter how many respondents are included in the study, the difficulty will arise of the extent to which an individual is competent in all of the fields touched on by the statements. In the present study an attempt to control for this variable was made by asking respondents to make a self-appraisal of their degree of competence in three response categories with respect to each statement. By scoring high, medium, and low appraisals as three, two, and one respectively a total degree of competence was obtained for each statement, and this was used as an indication of the respondents' competence, as a group, for that statement. By applying the findings from another experiment by Dalkey (1969:409) to this study, the total degree of competence can be used as an indication of the group's accuracy in making



a prediction about a given statement. Using almanac-type data, Dalkey found an inverse relationship between the group self-rating and the group error--in short, the higher the rating, the smaller the group error. Though reservations must be made in applying Dalkey's findings to the present study, it can nevertheless be argued that a high total degree of competence is a reasonable indication that the majority opinion concerning the statement is more accurate than the majority opinion concerning a statement for which the group expressed a low degree of competence.

Instrument design. Regardless of competence, a respondent's reply in the two rounds of predictions of this study was at least partially determined by the instrument design. In view of difficulties experienced, two aspects of this design are worthy of further discussion, namely, the "perpetual problem" and "never" categories. The former was introduced as a major modification to other reported Delphi studies. The reason for this modification was that, in the opinion of the researcher, several of the problems submitted in the first questionnaire seemed to fit more appropriately in this category than in a specific time period. It was therefore decided that respondents should be given the opportunity to indicate "perpetual" in their replies if they saw fit. The inclusion of this category no doubt reduced frequencies in other places and made interpretation of the predicted date of occurrence more difficult, but its extensive use by respondents throughout the study provided an extra dimension which would have been lost had it not been included.

With respect to the "never" category, two points need to be emphasized. A reply of "never" could mean either that the event or development described in a statement will never occur, or that the statement as such will never be recognized as a problem by the majority



of people affected by it. Though this distinction was recognized by the researcher, no attempt to examine it more closely was made because this would have meant requesting considerably more time of respondents with possible consequences of more "drop-outs" and superficial treatment of questionnaires.

Majority-opinion date. Another difficulty encountered in interpreting the results of the study is the extent to which the majority-opinion date can be regarded as a significant finding. This date refers to the time period by which 50 percent or more of the respondents had indicated that the problem or development would be clearly recognized by a majority of people affected by it. Since this time period is determined by adding frequencies in successive categories ("perpetual problem" included in "1970-71") until 50 percent is reached, it is obvious that a relatively high frequency in the "never" category will have the effect of moving the majority opinion back in time. Identification of this time period should, therefore, always be made in conjunction with an observation of the frequencies in all individual categories, and in particular the frequency in the "never" category. The main advantage in reporting this statistic is that it represents the "break-even" period, that is, the period for which there is an equal expectation that the problem will be recognized before or after it. It also assures that the opinion of every member of the group is represented in the final response.

Feedback. A final point worthy of mention in connection with the methodological technique is the use made in this study of one of the main characteristics of the Delphi method: controlled feedback. In studies reported by Gordon and Helmer (1966) and Dalkey (1969) and others who have followed their procedure, feedback was effected by providing



respondents with a summary in rounds three and four of the results of previous rounds, together with reasons submitted by respondents for predictions which disagreed with the majority opinion. In this study the summary of results was not included and feedback consisted of reasons obtained in the third questionnaire from respondents who had indicated the earliest and latest predictions for individual statements in the second questionnaire. The main argument against supplying respondents with details of group results from a previous round is that by so doing the researcher is introducing a measure of group pressure which the Delphi technique is designed to avoid and which, as the experiments of Asch (1958) have demonstrated, can produce distortions of individual judgment. In this study by supplying reasons for extreme predictions, the researcher was not attempting to force convergence by any kind of pressure, but merely letting the reasons speak for themselves and asking respondents to reconsider their original predictions on the strength of the reasons alone. An approach that may be fruitfully employed by subsequent researchers in this field would be to set up appropriately matched groups and use the "summary plus reasons" technique with one, and the "reasons only" approach with the other. Results obtained from both methods could then be compared for differences in the extent of convergence of opinion.

#### CONCLUSIONS

From the data reported in Chapter 4 and summarized above a number of conclusions may be drawn which relate to the original objectives of the study set forth in Chapter 1.



General Education Survey

One of the objectives was to survey general education practices in post-secondary, non-university educational institutions in Alberta.

Conclusions based on the findings from this research are set forth below:

1. There is considerable lack of agreement among the institutions contacted on what is meant by general education.

2. Specific objectives of general education have not been formulated by any of the institutions.

3. Though all of the colleges and institutes expressed interest in and concern for general education, considerable variation exists among them in the extent to which this kind of educational opportunity is provided.

4. Academic and vocational education receive much more emphasis in the institutions than general education.

5. There is evidence of increasing interest in general education in many of the institutions. The most obvious examples of this interest and activity are the setting up of specially-devised courses in general education in one public college in the fall of 1970, the expressed intention of both institutes of technology to include general education offerings in their curricula, and the experiments in non-credit courses and off-campus experiences either being carried out or proposed by two private colleges.

6. To a large degree the meaning attached to general education, the extent to which it is provided, and the problems associated with it are determined by the nature of the educational institution itself and by the particular student body to which it caters.



Delphi Study

Turning next to the Delphi study, it should be stated that conclusions based on data derived from this investigation can be only tentative and need to be regarded with some reservation. This observation is in no way meant to minimize the importance of the study or the contributions of the well-qualified respondents who participated. Rather it is intended to imply that any statement about the future is tentative, since by the very stating of it the opportunity for its subsequent denial is created. Such statements have, however, served a useful purpose if the stating of them has forced participants to ponder their roles in creating the future, and if reading them stimulates others to compare the world they desire with the alternatives suggested by expert opinion.

Substantive findings. Conclusions derived from the Delphi study into future problems relevant to general education which will likely face Alberta society during the next thirty years, are set forth below:

1. There are a wide range of societal problems, present and future, which are a legitimate concern of post-secondary general education in Alberta.

2. Implicit in many of the forecasts made are potential dangers to Alberta society which call for preventative action. In drawing attention to such possibilities the intention is not to indulge in sensationalism, but rather to indicate situations or problems which may develop if more desirable alternatives are not chosen. The list which follows should be regarded as typical rather than exhaustive, concentrating on key items rather than expounding details. Among the implicit dangers are:

a. Abuse of the natural environment. Serious demands will be



made on the natural environment as population increases, the economy expands, sources of actual and potential pollution become more prevalent, and as time available for leisure increases--particularly among lower income groups. The measures which may be undertaken to meet this danger could necessitate basic and drastic changes to values and ways of life previously taken for granted. Included among such measures will be a reconsideration of the wisdom of an economy based largely on market-place conditions, and a possible move away from private property ownership.

b. Social upheaval. The foregoing problems concerning the natural environment are inextricably interwoven with problems which will arise in many areas of social life. One of the most critical concerns relates to the probable necessity of change from the puritan work ethic, in which a man's work is seen as the basis of his self-respect and self-fulfilment, to an awareness of the virtues of leisure activities. This problem is further complicated by the fact that those persons likely to have most opportunity to enjoy leisure will be among the unskilled and semi-skilled segment of the population who may be least well prepared to cope with increased free time. Ironically, this surplus of workers will be associated with a shortage of personnel skilled in the technologies which will underlie future society and which will change more rapidly than the work force can be trained. Intensifying these problems will be the ever increasing urbanization of the population with all the attendant difficulties of concentrating large numbers of people in limited areas.

c. Concerns of the individual. All of the above problems have implications for society as a whole, but in addition they will affect all members of the population as individuals. One of the foremost concerns of the individual in Alberta society in the future will be a sense of



loss of his own uniqueness and significance. This will manifest itself in many ways, but one of the most significant may well be an increased tendency to "drop out" of society. Such deviation will undoubtedly be associated with the non-medical use of drugs which may or may not be harmful to the individual concerned, but which will certainly add to a sense of fragmentation in society. Emphasis on group needs, reduced opportunity for "meaningful" moral-ethical decision-making, and the continual changing of environments will also contribute to the individual's sense of loss of identity.

d. Conflict in values. Underlying all social conflicts of the years ahead will be the diverse value systems adhered to by the groups who constitute the society. Prominent among problems of this nature will be a clash between sacred-traditional systems of values and secular-humanistic-hedonistic systems. Moreover, increasing recognition of the part that biological data has to play in the determination of value systems will add another dimension to the conflict in this area. Though it may well be that a more humane society will eventually emerge from the turmoil, it is certain that many shades of confusion and dogmatism will be prevalent in the interim.

e. Economic inequality. As well as facing internal pressures from the kinds of societal problems described above, Alberta citizens will find that, as part of a larger world society, they will not be able to be insensitive to international problems created by an ever widening material gap between the have and have-not political systems of the world. Enjoying affluence at home, many will find it difficult to appreciate the seriousness of this problem. Moreover, since their assessment of this and other international concerns will be made largely



on the basis of an apparently endless flow of information and ready-made opinion supplied by the news media, they will sense an inadequacy in their ability to comprehend the situation. The end result may be a tendency to feel that the problem though potentially serious is too complicated for the average person to understand and that immediate tangible matters of self-interest are more important.

f. Distribution of political power. As the problems described above become increasingly apparent, they will undoubtedly place considerable pressure on the democratic system of government, which in its present form may not have sufficient flexibility to cope effectively. The alternative could be the accumulation of political power in the hands of a rotating political-industrial elite leading to a modern form of paternal dictatorship. Such a possibility would no doubt in theory be abhorrent to a great majority of Alberta and Canadian citizens, but in practice many may find this a more comfortable situation than the burden of responsible citizenship in an era when they find it increasingly difficult to understand the issues.

g. Concern in education. Since educational institutions are fundamentally concerned with the needs of the students and the society which they serve, all of the preceding problems can be expected to have repercussions on the educational scene. Some of the influence will be apparent in the curricula taught in the schools and colleges, some will take the form of external controls imposed on the institutions by the society which supports them. Perhaps the chief problem facing education in general and post-secondary education in particular will be to find ways of positively attacking society's ills rather than passively reflecting them. Central to this problem will be the difficulty of



finding teachers and administrators who understand the issues and can create institutions capable of preparing citizens sufficiently enlightened to want something better for themselves and their children than the trends suggest they will get.

3. If no corrective measures are taken, substantial development of the problems described above will take place during the next ten years. Indeed, according to a majority of respondents, some of them are already clearly in evidence, namely, problems of drug misuse, societal "drop-outs", shortage of well-trained teachers, and inadequacy of educational administrative structures.

4. Although there is evidence of potential dangers facing Alberta society, a desire for positive action to counteract such undesirable eventualities is also implied throughout the forecasts. This desire for more attractive alternatives is given its most explicit expression in statements referring to concern for quality in life and the need for people to become aware--to the point of concern and participation--of major human problems. Clearly the spirit behind such statements is one of optimism rather than pessimism, hope rather than despair.

Methodological aspects. Having presented conclusions drawn from substantive findings, consideration is now given to some aspects of methodology. The following conclusions refer to the effectiveness of the Delphi technique in forecasting problems relevant to general education:

1. The method proved particularly effective in eliciting statements of problems. Though in the predictive stages of the procedure various difficulties were experienced--more notably, ambiguity in the wording of statements and instability in panel membership--the method was successful in producing interaction between experts who could



otherwise have been brought together only with extreme difficulty.

Moreover, the final results present a summary of this expert opinion in which areas of agreement and disagreement are succinctly demonstrated.

2. The degree of competence section is a useful aid in dealing with the problem of uncertainty about the relative expertise among respondents. Its effectiveness could be improved by combining it with a more refined procedure, as described earlier, in determining the expertise of participants during the selection procedure.

3. There is evidence that predictive patterns of individuals are connected with variables of age, academic qualifications, and fields of work. This area could be made the subject of more intensive investigation in future research.

4. The effectiveness of utilizing expert opinion in a Delphi context might be increased through further methodological research. In addition to procedures mentioned earlier for reducing ambiguity and improving the selection of respondents, improvements can be made to techniques for providing feedback. In particular, procedures for obtaining more information on the reasons underlying respondents' opinions need to be developed in conjunction with methods for making this information available to others, without at the same time making totally unreasonable demands on the respondents.



## IMPLICATIONS

### Implications for Post-Secondary, Non-University Education in Alberta

The findings from the general education survey and from the Delphi study when viewed together carry certain implications for post-secondary, non-university education in Alberta. Since the problems identified through the utilization of expert opinion were all made with reference to general education, it behoves the institutions concerned to examine their offerings in this area in the light of the problems identified. The results of the general education survey indicate quite clearly that while the institutions express interest in this kind of education, it nevertheless receives considerably less attention than the more readily structured academic content and the more obviously applicable vocational instruction. However, in the light of the potential dangers to society presented in the previous section, educational institutions would be well advised to consider the long-range consequences of their present policies and ascertain the extent to which they might be contributing to, ignoring, or attempting to combat these implied threats to the future welfare of Alberta citizens. The urgency of such consideration is apparent in that the majority of respondents regarded most of the problems as potentially capable of reaching serious or obvious proportions during the next ten to fifteen years, or in other words, during the early adulthood of many of the students now enrolled in post-secondary institutions.

It might be argued that all of the problems are touched upon in one form or another in various courses presently offered by the institutions. Be that as it may, it cannot be considered as a substitute for general education; for the topic in such a situation is



invariably subordinate to the objectives of the course and discipline of which it is a part. Moreover, reliance on this approach means that a student's contact with a topic of vital concern to his future welfare is determined on a hit-or-miss basis by whether or not he takes a particular course.

It would appear that an interdisciplinary, total institutional approach is the only one likely to have any success in providing even minimal coverage of the kinds of problems identified in this study. Adoption of such an approach carries with it the added implications of finding the faculty and instructional procedures necessary to make it work.

#### Implications for Educational Administration

Though the study was primarily concerned with general education in Alberta's post-secondary, non-university institutions, it also has implications for educational administration per se. These implications derive from that aspect of the Delphi study concerned with the concept of long-range planning in a context of alternative futures.

When respondents were asked in Part II to indicate their opinions concerning the desirability or otherwise of individual statements, the results clearly showed that a majority were able to agree that most of the statements implied situations or developments that were either desirable or undesirable. An implication of this finding is that educational administrators might well begin to consider the extent to which they can become involved in planning a future more attractive than what could eventuate if such planning does not take place. Involvement of this kind could entail not only the re-orientation of individual institutions, but also the establishment of planning organizations which



would work in co-operation with similar agencies from other areas of society.

Emphasis on planning is of course not new to educational administration. It is widely accepted as a component of the administrative process, and as such has presumably been an important element in determining the educational system of the present day. However, in the past planning has been concerned mainly with preparing recommendations for what a particular situation should be like in five or twenty years from the present. The type of planning implicit in the concept of alternative futures is essentially different in that, as Michael (1968:68) states, "it also involves planning and vigorous participation in the development and use of the means for attaining the recommended ends." Persons engaged in such planning are "self-consciously seeking ways to usefully describe the characteristics of and preconditions for alternative futures in order that men may act in the present so as to make a preferred future more likely." (Michael, 1968:75). It is the contention of the writer that such a concept is as relevant to educational administration as it is to administration in government and industry with which it is more usually associated.

#### SPECULATIONS

To add a further dimension to the study the writer now presents some personal speculations, which are not based directly on the data but which have emerged in the process of thinking about the subject matter. The assertions made are intuitive and no claims are held concerning their reliability. However, the writer contends that the seeds of what they suggest are already present in the world today, and



the speculations are offered as an imaginary perspective for thinking about the future and its alternatives.

Three speculations are presented all of which are derived from interrelated central propositions. In the following description the propositions are stated first, then the speculative implications based on them briefly discussed.

#### Change in the Democratic Process

Proposition: The more complex a society becomes (through expanding technology, burgeoning population, and increasing affluence) the more vulnerable it is to disruption, and the more co-ordinated and integrated it needs to be in order to function.

On the basis of the above proposition the writer speculates that democratic systems of government as they currently exist will gradually undergo considerable modification.

Western democracy, and more particularly North American democracy, is founded on liberalist thought which defends the right of organization to groups whose avowed aims are to destroy the system. Such undiscriminating tolerance can logically lead only to disintegration. Moreover, a democracy in order to survive must be built around a central core of values to which at least most of its members subscribe. No such system of values exists in North American society today.

These cracks in the democratic process, though potentially serious, would in themselves take a long time to destroy the system. However, their effects will be intensified in the future by increasing complexity and--consequently--vulnerability to disruption. The governing system will not be able to deal with the critical issues which it will face if impeded continuously by fragmented interest groups. Moreover, there will be a critical shortage of time for decision-making, and in



order to avert disaster the government will have to impose and enforce controls unpopular with the electorate. The democratic process as it exists today will not be able to function under such conditions.

An alternative perhaps least foreign to Western thinking would be modification of present practice to provide for a ruling technocracy comprised of individuals who are knowledgeable, responsible, and compassionate. How such individuals are to be found and trained is one of the most critical educational problems of the present and future. If such people are not found, there is grave danger that enormous power will eventually be concentrated in the hands of persons who could plunge the world into a new dark age from which there may be no emerging.

#### Demise of the Free-Enterprise System

Proposition: The more highly developed a society based on free-enterprise becomes (through expanding technology, burgeoning population, and increasing affluence) the more apparent are the weaknesses inherent in the system which undergirds it.

In accordance with the above proposition the writer anticipates the gradual modification of the Western system of free-enterprise as it presently exists to a more highly co-ordinated system of centralized control.

Based as it is on the profit motive, the inherent weaknesses in a system of free-enterprise--wastefulness, exploitation, unplanned consequences, surpluses and deficits, self-aggrandizement--are already becoming apparent in highly industrialized societies. In a future era not blessed with the abundance of the past and present, long-range consequences of actions will have to be carefully considered, and civilization will not be able to afford indiscriminate and unco-ordinated



profiteering.

Ironically, however, future society will be desperately in need of the kind of initiative on which free-enterprise is based, and herein lies a central dilemma facing the leaders of the future: how to maintain a sense of purpose and a spirit of initiative in a system where rigid control is necessary and a potentiality for boredom abundant.

The possibility that those in power will eventually attempt to solve the dilemma by resorting to genetic engineering to adapt individuals to their environments is a potentiality that no longer exists only in the realm of science fiction. Such a possibility again underlines the necessity for finding ways to develop a system of firm but benevolent government.

#### Development of a Future-Oriented Morality

Proposition: The more highly developed a society becomes (through expanding technology, burgeoning population, and increasing affluence) the more dependent does the welfare of future generations become on the actions taken by preceding generations.

On the basis of the above proposition the writer speculates that as the potentially undesirable terminus of the present course of events becomes more generally recognized, there will slowly develop a sense of moral responsibility for the quality of future life of man on this planet.

Such a moral consciousness does not presently exist (though the essence of it is already abroad in some of the concern about pollution) and has no historical precedent. While it is true that individuals have in the past provided for the future of their families and other selected groups, mankind as a whole has never given serious consideration



to the welfare of succeeding generations. Indeed, there was, until recently, no need to do so; for it was generally assumed that a future would eventuate which would not be greatly dissimilar to the present and past. If anything, it would be better than either because the benefits deriving from science would make it that way.

However, in the nuclear age there is reason to doubt the basic assumption that there will be a future for mankind, and there is abundant reason to believe that any which does eventuate will be undesirable in terms of present conditions. Such a fundamental change in outlook implies the necessity of developing in individuals a sense of the future that will lead them to modify their own self-interest by considering the welfare of unborn generations.

Whether such a view of life can be established before extreme coercive measures become essential remains to be seen. What does seem more certain, however, is that the continuation of man as a being with a unique identity (rather than a programmed automaton) will depend precisely on his ability to develop this sense of moral consciousness concerning the future of his species.

#### RECOMMENDATIONS

On the basis of the foregoing implications and speculations several recommendations are now offered which it is hoped may prove useful in dealing with some of the issues raised in this study. Concerning the development of general education in Alberta's post-secondary, non-university educational institutions, it is recommended that:

1. Individual institutions set up appropriate committees



composed of representatives from the administration, faculty, students, and community to examine the concept of general education and prepare policy concerning it.

2. Such policy be future oriented and concentrate on the role that general education can play in assuring a decent quality of life in the face of undesirable alternatives.

3. If an institution approves in principle the offering of general education, that this intention be translated into specific behavioural objectives of general education.

4. Institutions investigate ways and means of sharing ideas and information about general education.

5. The Alberta Colleges Commission examines the role it might play in providing assistance to institutions which express interest in extending their offerings in general education.

Concerning the part that long-range planning might play in the field of educational administration, it is recommended that:

1. Studies employing long-range forecasting techniques be encouraged by departments of educational administration.

2. Serious consideration be given to the establishing of a permanent educational planning commission which either alone or in collaboration with similar agencies from government and industry will be concerned with monitoring the future and drawing attention to alternatives open to society in determining its future.



## FURTHER RESEARCH

This study examined post-secondary education in the context of alternative futures. Further research might consider some issues raised in this study in more detail, or adapt the technique employed to other areas.

### General Education Studies

Possible studies in the area of general education are as follows:

1. An on-going study of the effects of the general education courses to be introduced in two Alberta public colleges in 1970-71.
2. Studies of faculty and student attitudes towards general education at the post-secondary level.
3. Delphi studies to utilize expert opinion on specific aspects of general education.

### Studies of the Future

Possible studies in the area of futures research could include the following:

1. Delphi studies examining the likely roles to be played by various educational institutions in the future.
2. Delphi studies of the future which instead of dealing with opinion alone attempt to collect existing factual data as well and make both opinion and fact available as feedback.
3. Delphi studies to examine the influence that personal variables exert on the way that respondents predict future events.
4. Delphi studies with a methodological emphasis to examine the effects of various procedural modifications in the areas of:



selection of experts, ascertaining respondents' relative competences on individual items, reducing ambiguity in the wording of statements, obtaining explicit reasoning behind opinions stated, and providing essential items of feedback.



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## Appendices



Appendix A

GENERAL EDUCATION QUESTIONNAIRE AND  
LETTER TO COLLEGE PRESIDENTS



## DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

GENERAL EDUCATION QUESTIONNAIRE

NAME OF INSTITUTION: \_\_\_\_\_

## QUESTION 1:

Does your institution offer general education? If so, how do you define general education?

## QUESTION 2:

Does your institution have specific objectives regarding general education? If so, please state them.

## QUESTION 3:

If general education is offered in your institution, what kinds of formal and informal courses, activities, events, and materials are provided?

	FORMAL	INFORMAL
*Courses		



	FORMAL	INFORMAL
Activities		
Events		
Materials		

\*If you are offering courses specifically devised for general education, please indicate below the fields in which they are offered



**QUESTION 4:**

Does your institution have plans for future provision of general education? If so, please describe briefly.

**QUESTION 5:**

What are or have been the problems associated with establishing general education courses, activities, etc. in your institution?

ADDITIONAL COMMENTS YOU MAY WISH TO MAKE AND WHICH DO NOT FIT CONVENIENTLY UNDER THE CATEGORIES PROVIDED, WOULD BE APPRECIATED.

THANK YOU FOR YOUR TIME, EFFORT, AND CONSIDERATION. PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED.



DEPARTMENT OF EDUCATIONAL ADMINISTRATION  
UNIVERSITY OF ALBERTA  
EDMONTON

This letter concerns a study which I am conducting as a candidate for the degree of Master of Education in the Department of Educational Administration at the University of Alberta.

The title of my study is "General Education in Post-Secondary, Non-University Educational Institutions in Alberta." The study has the support of the Alberta Colleges Commission. The supervisor is Dr. F.C. Thiemann, Associate Professor in the Department of Educational Administration at the University of Alberta.

The study seeks to identify the major problems facing Alberta society during the next thirty years in order that educational administrators and curriculum builders concerned with post-secondary education can design procedures and develop programs that will attempt to deal with these problems before they reach unmanageable proportions.

More specifically, the study is concerned with problems that fall within the scope of general education, which I have defined behaviourally as that education which prepares an individual to live more fully as a person and more effectively as a citizen.

I am writing to you at this time to request information, as a supplement to that available in the Calendar, on your own institution's policy with regard to general education.

Enclosed is a questionnaire which I would appreciate your completing and returning in the envelope provided. Your reply will, of course, be confidential; but as I am contacting the presidents of all of the institutions concerned, I would hope to be able to extract a synthesis of the current position and opinion for incorporation in my study.



I realize that there are many demands on your time, and I assure you I am making this request only because I feel that the information obtained will make a valuable contribution to the dialogue on the direction that post-secondary education should take in the future.

If you require any further clarification, please do not hesitate to contact me at the Department of Educational Administration, University of Alberta, Edmonton, or by telephoning 432-4911 (day) or 433-0639 (evening).

Finally, may I ask that I receive your reply by April 17, 1970 in order that there will be sufficient time to include it in the preliminary draft of my report.

Yours sincerely,

D.E. Berghofer



Appendix B

TELEPHONE MESSAGE, CONFIRMATION LETTER,  
AND RETURN MEMO



## TELEPHONE MESSAGE

(Name of individual). My name is Des Berghofer. I am a graduate student in the Department of Educational Administration at the University of Alberta.

I am calling you in connection with a research project being carried out under the direction of Dr. F.C. Thiemann on long-range planning in post-secondary education in Alberta.

There are seven graduate students working on this project, and my particular area of interest is general education in Alberta's post-secondary, non-university educational institutions (public colleges, institutes of technology, agricultural and vocational colleges).

The value of this study lies in the guidance it will provide in coming to grips with future problems and issues.

The method of research I am using is a modification of the Delphi technique and is essentially concerned with predicting problems facing society and post-secondary education during the next thirty years. The method involves selecting a wide range of people knowledgeable in specialized areas to participate in the project.

You have been nominated as one of the knowledgeables because of your involvement in \_\_\_\_\_.

Participation in the project would involve your being contacted by mail on four occasions, and past experience indicates that each contact would require about one-half hour of your time.

Are you prepared to participate?

(If agreeable). Fine. I will confirm this by letter immediately, and I look forward to working with you on this project.

Thank you very much.



## DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

EDMONTON

This letter is to confirm our recent telephone conversation regarding a research project being carried out in the Department of Educational Administration, University of Alberta under the direction of Dr. F.C. Thiemann, Associate Professor in this department.

I wish to thank you for agreeing to participate in my study, which, you will recall, concerns general education in Alberta's post-secondary, non-university educational institutions.

The value of this study lies in the guidance it will provide in coming to grips with future problems and issues. I assure you that your participation is greatly appreciated.

As I explained on the telephone, the method to be employed is a modification of the Delphi technique. It is designed to predict problems likely to face society and post-secondary education during the next thirty years.

You will be contacted four times by mail, and past experience indicates that each contact will require approximately one half-hour of your time. Stamped addressed envelopes will be provided on each occasion for the return of materials.

Owing to the nature of this project, it would be appreciated if you refrain from discussing it with others as they may also be engaged in the study. Should you have questions at any time concerning the study, please feel free to contact me. My telephone number at the university is 432-4911 and at home, 433-0639.

I enclose a form acknowledging receipt of this letter and confirming your participation. I would be grateful if you would return this at your earliest convenience.

Thank you for your co-operation. I look forward to working with you.

Yours sincerely,

D.E. Berghofer



Date \_\_\_\_\_

Memo to: D.E. Berghofer  
Department of Educational Administration  
University of Alberta  
Edmonton 7, Alberta

Re: Post-Secondary Education Project

This memorandum acknowledges receipt of your letter concerning the above project and confirms my agreement to participate.

\_\_\_\_\_  
(Signature)



## Appendix C

### DELPHI INSTRUMENTS



## DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

MODIFIED DELPHI INVESTIGATION

This is Part One of the Modified Delphi Investigation in which you have kindly agreed to participate.

The topic of the study is "General Education in Post-Secondary Non-University Educational Institutions in Alberta."

The researcher is Mr. D.E. Berghofer, a candidate for the degree of Master of Education in the Department of Educational Administration at the University of Alberta, Edmonton.

The supervisor of the study is Dr. F.C. Thiemann, Associate Professor in the Department of Educational Administration, University of Alberta.

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Introduction

This study is concerned with the development of general education programs in Alberta's post-secondary, non-university educational institutions -- public and private colleges, institutes of technology, agricultural and vocational colleges.

The study seeks to identify the major problems facing Alberta society during the next thirty years in order that educational administrators and curriculum builders concerned with post-secondary education can design procedures and develop programs that will attempt to deal with these problems before they reach unmanageable proportions.

This is not to suggest that society's problems can be entirely solved in educational institutions, but it does imply that these institutions have a responsibility to produce a well-educated citizenry which is aware of the problems and concerned enough to look for positive solutions whilst exercising their citizenship.

The problems that the study seeks to identify are those that fall within the scope of general education, defined here as that education which prepares an individual to live more fully as a person and more effectively as a citizen. General education in this context places a high value on humanity and the need for social consciousness.



(2)

Moreover, because we live in an age of rapid change, general education must be concerned with preparing people to live in the world not only of the present but also of the future. Therefore, the emphasis in this study is to identify future problems, the roots of which may be evident in past events and present trends.

### The Task

Accordingly, you are asked to list on the sheet provided the major problems in areas of special concern to you, which you believe will develop at any time during the next thirty years, and which may influence general education in Alberta's post-secondary, non-university educational institutions.

Please concentrate on a few major problems only. This study is concerned with broad general issues rather than with detailed specific matters. However, in stating the problems please be as precise as possible so that your meaning will be quite clear. It would also be helpful in later stages of the study if you could state these initial problems in the future tense, that is, as something that "will" be.

All communications received are strictly confidential. Names are included on the return sheet for statistical and operational purposes only.

### Deadline

As you know, there are subsequent stages in this project, and in order that all problems received may be processed for the second stage, you are asked to return the enclosed sheet in the stamped addressed envelope provided by January 30, 1970. Please retain these introductory remarks for future reference.

If you have any questions concerning the study, please do not hesitate to contact me at the Department of Educational Administration, University of Alberta, Edmonton. My telephone number at the university is 432-4911 and at home, 433-0639.

Your co-operation is sincerely appreciated.

D.E. BERGHOFER



DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

MODIFIED DELPHI INVESTIGATION

NAME: \_\_\_\_\_

PROBLEMS:

THANK YOU. PLEASE RETURN IN THE ENVELOPE PROVIDED.



DEPARTMENT OF EDUCATIONAL ADMINISTRATION  
UNIVERSITY OF ALBERTA

MODIFIED DELPHI INVESTIGATION

PART II

INTRODUCTION

The future problems facing Alberta society as identified by respondents in Part I of this study have been classified into sets and are submitted here for your further consideration.

Some problems were contained within others, and where necessary the wording has been altered to form, brief comprehensive statements. Additional comments provided by respondents, though not included in this instrument, will prove valuable in later parts of the study.

THE TASK

In this part of the study response sheets are provided on which you are asked to make predictions and other judgments concerning each of the numbered statements on pages 2-8.

In each case your prediction should be made with reference to the following question:

On the basis of past and present trends when, in your opinion, will the problem or development reach such proportions that it will be clearly recognized by a majority of people affected by it.

The implication is that by the time it is so recognized it will already have reached serious or obvious proportions. If any corrective measures are necessary, they should therefore be implemented before this time.

DEADLINE

In order that replies may be processed for Part III of the study, please return the response sheets in the envelope provided by Friday, February 27, 1970. You may retain the statements for future reference.

Your co-operation is sincerely appreciated.

D.E. BERGHOFER



NAME: \_\_\_\_\_

DEPARTMENT OF EDUCATIONAL ADMINISTRATION  
UNIVERSITY OF ALBERTA

MODIFIED DELPHI INVESTIGATION

PART II

RESPONSE SECTION

GENERAL QUESTION

The general question to ask concerning each statement is:

*On the basis of past and present trends when, in your opinion, will the problem or development reach such proportions that it will be clearly recognized by a majority of people affected by it.*

The implication is that by the time it is so recognized it will already have reached serious or obvious proportions. If any corrective measures are necessary, they should therefore be implemented before this time.

INSTRUCTIONS FOR COMPLETING RESPONSE SHEETS

For each statement check the appropriate cells for:

- (a) the probable date of occurrence;
- (b) your opinion of the nature of the statement;
- (c) a self-appraisal of your degree of competence in making a prediction about the statement.



	Probable Date of Occurrence	Nature of the Statement			Degree of Competence			
		1970-71	1972-75	1976-80	1981-85	Later	Never	Perpetual Problem
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								



PERSONAL DATA

Your co-operation in providing the following items of personal data would be appreciated.

All replies are confidential.

1. To which age category do you belong?  
1. 15-24 —
2. How long have you been in your present position?  
1. 0-1 complete years —  
2. 2-3 complete years —  
3. 4-5 complete years —  
4. 6-9 complete years —  
5. 10+ complete years —
3. What is your highest academic qualification?  
1. Ph D —  
2. Another Graduate Degree —  
3. Bachelor's Degree —  
4. Some Post-secondary —  
5. Secondary —

THANK YOU. PLEASE RETURN ALL RESPONSE SHEETS IN THE ENVELOPE PROVIDED.



DEPARTMENT OF EDUCATIONAL ADMINISTRATION  
UNIVERSITY OF ALBERTA

MODIFIED DELPHI INVESTIGATION

PART III

INTRODUCTION

I wish to thank you for your time and effort spent on parts one and two of the study. This has already provided much valuable data on the difficult task of forecasting future problems facing Alberta society.

I realize that a study of this nature places a considerable demand on respondents, and this is another reason why your contribution is so greatly appreciated. Perhaps at this time you may find it reassuring to recall that after Part III, there is only one more instrument remaining.

The purpose of the present mailing is to obtain additional information from respondents in order to provide further feedback in Part IV.

THE TASK

In this part of the study, response sheets are provided which indicate the prediction you made regarding certain statements from Part II.

Copies of the statements from Part II are attached to this information sheet. You will recall that your prediction was originally made with reference to the following question:

On the basis of past and present trends when, in your opinion, will the problem or development reach such proportions that it will be clearly recognized by a majority of people affected by it?

The task in Part III is for you to give a brief reason for your prediction. Please do so in the space provided on the response sheet.

DEADLINE

In order that replies may be processed for Part IV of the study, please return the response sheets in the envelope provided by April 1, 1970. If you have any questions, please telephone 432-4911 (day) or 433-0639 (evenings). You may retain the statements for future reference.

Your cooperation is sincerely appreciated.

D.E. BERGHOFER







## DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

MODIFIED DELPHI INVESTIGATIONPART IV

## FINAL STAGE

INTRODUCTION

The final stage in the modified Delphi study has now been reached. Once again I wish to thank you for your time and effort, which has contributed very significantly to the present development of the project.

## Summary of the study to date:

Part I -- the identification of future problems facing Alberta society;

Part II -- predicted dates of occurrence and other judgments;

Part III -- reasons for particular predictions.

Part IV provides you with the reasons given by respondents in Part III. The reasons, together with the original statements, are enclosed. Those reasons entitled "Early" were given by respondents who made the earliest prediction for the particular statement. Those entitled "Late/Never" were given by respondents who predicted that the particular statement would occur either in the more distant future or "not ever". The original wording of reasons has been retained as much as possible.

THE TASK

Referring to the enclosed reasons, you are asked to reconsider and possibly revise your original predictions by completing the response section on each sheet.

As in Part II it is most important that predictions be made with reference to the following question:

On the basis of past and present trends when, in your opinion, will the problem or development reach such proportions that it will be clearly recognized by a majority of people affected by it.



(2)

The implication is that by the time it is so recognized it will already have reached serious or obvious proportions. If any corrective measures are necessary, they should therefore be implemented before this time.

Instructions for completing the response section. For each statement check the appropriate cell for:

- (a) the probable date of occurrence (one category only);
- (b) a self-appraisal of your degree of competence in making a prediction about the statement.

Note: The category "nature of the statement" which appeared in Part II has been deleted from Part IV as it is not considered necessary to repeat it.

DEADLINE

AT THE CONCLUSION OF THE STUDY YOU WILL BE PROVIDED WITH A SUMMARY OF THE RESULTS OF PART IV IN APPRECIATION OF YOUR PARTICIPATION.

In order that replies may be processed as quickly as possible, please return all of the enclosed sheets in the envelope provided by May 8, 1970. If you have any questions, please telephone 432-4911 (day) or 433-0639 (evening).

Your continuing co-operation is sincerely appreciated.

D.E. BERGHOFER



Modified Delphi Investigation: Part IV



## Appendix D

SUMMARY OF DELPHI DATA COMPRISING STATEMENTS, REASONS, PERCENTAGE FREQUENCIES FOR PROBABLE DATE OF OCCURRENCE AND COMPETENCE, AND TOTAL PERCENTAGE COMPETENCE



Table 42

Summary of Delphi Data Comprising Statements, Reasons, Percentage Frequencies for Probable Date of Occurrence and Competence, and Total Percentage Competence

Statement <sup>a</sup>	Reason for prediction <sup>b</sup>		Prediction no.	Probable date of occurrence							Competence			Total competence %	
	Early	Late/Never		70-71	72-75	76-80	81-85	Later	Never	Perpetual problem	High	Med	Low		
<u>LEISURE ACTIVITIES</u>															
1. Finding ways for the creative and meaningful use of increased leisure time.	There is present concern for the future of workers displaced by technology.	Vast majority not concerned about words like "creative" and "meaningful". However they use their time is meaningful for them.	1 <sup>c</sup> (N: 47)	4.3	*	17.0	21.3	14.9	6.4	4.3	31.9	21.3	76.6	2.1	73.0
2. Increased leisure time placing a potentially disastrous demand on physical and natural resources.	Lower income class with increased leisure rely on public facilities near large urban areas, e.g. Lake Wabamun, fishing streams near Calgary.	Travel potential of the world, increased awareness of the problem, and fluctuations in economy will keep this in balance.	1 (N: 47)	4.3	6.4	25.5	21.3	10.6	21.3	10.6	27.7	53.2	17.0	68.8	
3. Difficulty for many of changing from the puritan work ethic to an awareness of the virtues of leisure activities.	Has been an individual problem for decades. Collectively a problem now for a consumer-based economy.	Transition will take place so slowly that the individual will not be aware of the change taking place.	1 (N: 46)	8.7	*	19.6	15.2	17.4	10.9	4.3	23.9	32.6	56.5	4.3	71.7
			2 (N: 44)	13.6	15.9	25.0	13.6	9.1	6.8	15.9	20.5	70.5	9.1	70.5	
<u>FRAGMENTATION OF SOCIETY</u>															
4. The deliberate re-development of selective and elitist policies in education.	Present narrow and rigid criteria for entrance to university and other post-secondary institutions.	Society is becoming more communal. The trend is away from "elitism". In one or two more generations "elitish" won't count, "selective" will.	1 (N: 44)	2.3	*	25.0	11.4	9.1	6.8	25.0	20.5	20.5	54.5	25.0	65.2
5. Elitist and closed-door policies in education producing increased stratification of society and societal unrest.	Geographical and social inaccessibility of educational institutions. Rigid entrance requirements.	Education in North America has always done this and will continue to do so. Indications are towards declining elitism in education and society.	1 (N: 44)	11.4	11.4	18.2	4.5	9.1	27.3	18.2	18.2	61.4	20.5	65.9	
6. Communication difficulty between the various stratas of society and between government and large organizations.	Present evidence, generation gap, disrespect for authority, white paper on taxation.	Between stratas of society the difficulty is economic, but in future money to obtain "things" will not be as important as time to experience "things". Between government and large organizations, government will dominate.	1 (N: 44)	*	27.3	15.9	4.5	9.1	0.0	2.3	40.9	36.4	54.5	9.1	75.8
7. Persons electing to "drop-out" of society.	Current examples: drug problem and hippie movement.	Will never be significant as a problem. Society will adapt. Serves as a self-examination of values.	1 (N: 45)	28.9	22.2	6.7	2.2	0.0	4.4	35.6	24.4	53.3	22.2	67.4	
8. A changing corporate pyramid intensifying the differences between managers, technical specialists, and others.	The implementation of "Management by Objectives" principles with accompanying narrow job descriptions and performance evaluation techniques.	People will have more respect for people regardless of status.	1 (N: 43)	2.3	25.6	23.3	7.0	4.7	16.3	20.9	27.3	45.2	27.3	68.2	
			2 (N: 44)	6.8	*	15.9	22.7	6.8	9.1	27.3	11.4	25.0	56.8	18.2	68.9
<u>THE INDIVIDUAL IN SOCIETY</u>															
9. Loss of individuality, privacy, and motivation through manipulation of the individual as a number rather than a person, and for economic rather than humane reasons.	Systems approach. Growth of large impersonal institutions. Data banks of personal information, e.g., for credit purposes.	People can adapt themselves to various states of privacy. The trend in this direction has met with strong reaction. Will not be a problem.	1 (N: 46)	21.7	*	21.7	23.8	6.5	6.5	10.9	8.7	32.6	58.7	8.7	74.6
10. Convincing workers, at all levels, of their moral and social responsibility to produce.	Thirty years ago management ruled; unions now rule. Government is stepping in to bring reason back to the middle of the road.	Several sectors of more advanced economies clearly indicate that production controls are necessary. People will always accept this responsibility.	1 (N: 46)	13.0	10.9	13.0	6.5	4.3	23.9	28.3	21.7	63.0	15.0	68.8	
			2 (N: 45)	6.7	11.1	31.1	4.4	8.9	17.8	20.0	20.0	60.0	20.0	66.7	
11. Glorification of the individual downgraded to emphasis on group needs.	Necessity for ombudsmen and prominence of bureaucracy give cause for alarm.	The only group tendencies are in the realm of "rationalized" administration in education, government, and business. This impersonality produces alienation and stimulates individualism.	1 (N: 45)	8.9	*	13.3	13.3	8.9	11.1	17.8	26.7	31.1	60.0	8.9	74.1
			2 (N: 45)	11.1	22.2	11.1	4.4	15.6	17.8	17.8	22.2	57.8	20.0	67.4	



Table 42 (continued)

Statement	Reason for prediction		Prediction no.	Probable date of occurrence							Competence			Total competence %
	Early	Late/Never		70-71	72-75	76-80	81-85	Later	Never	Perpetual problem	High	Med	Low	
12. Reduced opportunity for "meaningful" moral-ethical decision-making.	"Meaningful" decisions are made by the individual, and he knows beforehand he must live with the consequences. Not possible in "mass" society. Compulsion to conform.	Increasing interaction of people will prevent this from happening. Most people will not think about it.	1 (N: 45) 2 (N: 45)	13.3 17.8	13.3 11.1	6.7 22.2	4.4 4.4	8.9 4.4	28.9 26.7	24.4 13.3	17.8 17.8	64.4 64.4	17.8 17.8	66.7 66.7
<u>SOCIETAL CHANGE: URBAN AND RURAL</u>														
13. Increasing urbanization creating undesirable social pressures through congestion, disparity in standards, and changing life styles.	Crime rate increasing in cities faster than population; disparity in education between suburbs and city core; decisions made without consideration of human needs.	Some signs are apparent now, and as there is no government move to change the trend, a problem may develop.	1 (N: 45) 2 (N: 44)	28.9 40.9	26.7 34.1	17.8 13.6	15.6 9.1	2.2 0.0	0.0 0.0	8.9 2.3	41.3 40.9	47.8 54.5	10.9 4.5	78.5 78.8
14. Increasing technical-business approach to farm operation.	NFU is already drawing attention to the matter. Must happen in next two years if we are to compete.	Will never be a problem. Would be good for survival.	1 (N: 45) 2 (N: 43)	28.9 23.3	46.7 46.5	13.3 14.0	4.4 7.0	0.0 0.0	4.4 9.3	2.2 0.0	28.3 23.3	28.3 46.5	43.5 30.2	63.0 64.3
15. Increasing inequality of distribution of goods and services.	Apparent since mid '60's in Alberta; trend towards urbanization and commercial conglomerate corporations. Services increases the gap between the affluent and poor	The trend is towards concern for poverty and equality. Inequality will decrease.	1 (N: 46) 2 (N: 44)	17.4 18.2	10.9 20.5	19.6 9.1	4.3 4.5	0.0 11.4	19.6 20.5	28.3 15.9	23.9 20.5	54.3 59.1	17.4 20.5	65.9 66.7
<u>SOCIETAL CHANGE: GENERAL</u>														
16. Insecurity in people produced by continually making existing environments obsolete.	Loss of the familiar upsets people. Many workers are pawns in the hands of managers of business organizations.	New generation will not be insecure. Environments rarely change so rapidly that there is no time to adjust.	1 (N: 44) 2 (N: 44)	11.4 6.8	22.7 20.5	9.1 22.7	13.6 4.5	11.4 9.1	6.8 13.6	25.0 22.7	24.4 15.9	62.2 68.2	13.3 15.9	72.0 66.7
17. Increasing disparity between the observable function of institutions and their cultural meaning.	Distance is increasing between recipients of institutional "services" and the members of the institution. Churches: social concerns rather than religious.	This will never be recognized as a problem by the majority of people involved. They will adjust to it.	1 (N: 45) 2 (N: 44)	22.2 25.0	20.0 18.2	20.0 9.1	4.4 9.1	4.4 11.4	4.4 9.1	24.4 18.2	24.4 25.0	55.6 59.1	20.0 15.9	68.1 69.7
18. Conflict between institutions and rapid technological change.	Impact of technology on both social and natural environment is not clearly understood. Fear of job redundancy, e.g., teachers' organizations fear ETV.	The majority will never see this as a problem. This kind of conflict is really a creative tension.	1 (N: 42) 2 (N: 43)	28.6 18.6	33.3 25.6	4.8 7.0	0.0 7.0	4.8 14.0	4.8 7.0	23.8 20.9	46.5 20.9	44.2 61.4	9.3 11.4	81.0 66.7
19. Increased problem solving through short-run physical solutions.	Social problems initially always have an element of socio-genetic causation. Environmentalists try to solve them as if they were caused solely by the environment, e.g., more crime, therefore build more jails.	There is no such thing as "short-run physical solutions" to historic socio-economic problems. Such attempts merely exemplify the problem.	1 (N: 43) 2 (N: 43)	25.6 14.0	20.9 11.6	20.9 11.6	0.0 7.0	4.7 9.3	4.7 23.3	23.3 23.3	16.3 11.6	65.1 69.8	18.6 18.6	65.9 64.3
20. Shortage of skilled personnel in rapidly expanding technological and automated fields, and a surplus of unskilled workers.	The majority of people concerned are already well aware of it. Rising unemployment. Difficulty of hiring skilled workers.	Statement misses the basic problem. Much of our technical training is based upon present and disappearing skills. Will be a surplus of both skilled and unskilled workers.	1 (N: 47) 2 (N: 45)	34.0 28.9	29.8 28.9	12.8 11.1	6.4 6.7	4.3 4.4	2.1 13.3	10.6 6.7	34.0 22.2	57.4 57.8	8.5 20.0	75.2 67.4
21. "Women's emancipation" from the home.	We are experiencing it now. It leads to other problems. It is a fast growing movement.	Only a few women really want it. A woman's place will always be in the home.	1 (N: 45) 2 (N: 44)	13.3 27.3	15.6 20.5	17.8 13.6	13.3 4.5	11.1 15.9	11.1 9.1	17.8 9.1	23.9 29.5	54.3 50.0	21.7 20.5	68.9 69.7
<u>POLITICAL POWER DISTRIBUTION</u>														
22. The accumulation of political power in the hands of a rotating political-industrial elite, leading to a modern form of paternal dictatorship.	Renewal of NORAD agreement without consultation of Canadian people. Alliance similar to Krupp-Nazi association appearing in different political form in U.S. and behind the Iron Curtain.	No evidence or trends of this taking place. Will never be a problem for the majority of people.	1 (N: 43) 2 (N: 43)	7.0 16.3	14.0 16.3	14.0 9.3	9.3 9.3	4.7 11.6	25.6 23.3	25.6 14.0	34.1 20.9	52.3 48.8	13.6 30.2	75.2 63.6
23. Technological advance producing conflict between professional organizations and methods of tendering services by representatives of the people.	Current examples: pollution control by groups other than government; cost accounting viewed with jaundice by The Alberta Teachers Association.	The corruptness of professional organizations will eventually be recognized by the public. The genuine professionals will then work their own salvation.	1 (N: 41) 2 (N: 42)	22.0 9.5	9.8 33.3	19.5 26.2	17.1 4.8	12.2 2.4	7.3 7.1	12.2 16.7	23.8 26.2	54.8 59.5	21.4 14.3	69.1 70.7



Table 42 (continued)

Statement	Reason for prediction		Prediction no.	Probable date of occurrence							Competence			Total competence %	
	Early	Late/Never		70- 71	72- 75	76- 80	81- 85	Later	Never	Perpetual problem	High	Med	Low		
24. The formation of a new kind of regional government for the prairie provinces and their northern extensions.	Much writing and discussion has already taken place. Several conferences scheduled in 1970 to discuss this question.	Not a practical possibility. Many people will do everything they can to see that this does not happen.	1 (N: 45) 2 (N: 43)	4.4 2.3	6.7 7.0	22.2 16.3	17.8 18.6	17.8 25.6	24.4 27.9	6.7 2.3	33.3 25.6	40.0 37.2	24.4 37.2	68.1 62.7	
25. Unrest over foreign domination of and influence on Canada's natural resources, both human and physical.	Current examples: Americanization of Canadian universities; sovereignty over Arctic waters.	Not yet sufficient awareness or concern. Realization will come later.	1 (N: 45) 2 (N: 43)	* 30.2	31.1 18.6	11.1 20.9	0.0 11.6	0.0 4.7	0.0 4.7	26.7 9.3	44.4 30.2	42.2 58.1	13.3 11.6	77.0 72.9	
<u>DETERIORATION OF THE NATURAL ENVIRONMENT</u>			1 (N: 47) 2 (N: 45)	36.2 48.9	34.0 28.9	12.8 13.3	4.3 2.2	2.1 2.2	0.0 0.0	10.6 4.4	44.7 28.9	51.1 57.8	4.3 13.3	80.1 71.9	
26. Maintaining the natural environment in the face of increasing pollution, burgeoning population, and extraordinary economic demands	Information sources strongly suggest that this problem is upon us NOW. Legislation and education on the subject are needed.	This will never be a serious problem because of the present significant public interest in pollution.	1 (N: 44) 2 (N: 43)	9.1 25.6	6.8 7.0	27.3 20.9	9.1 4.7	13.6 16.3	18.2 14.0	15.9 11.6	43.2 27.9	36.4 58.1	20.5 14.0	74.2 71.3	
27. Loss of the natural resource base through continued adherence to a management system founded on a market-place economy and private property ownership.	Profit motive encourages exploitation of natural resources. People want as much as they can get -- and now.	Politically loaded statement. Present system is being substantially modified. Disastrous record of state control elsewhere. Depletion is a function of consumption rather than ownership.	1 (N: 44) 2 (N: 43)	20.5 25.6	20.5 7.0	15.9 20.9	9.1 4.7	0.0 16.3	11.4 14.0	22.7 11.6	31.8 15.9	50.1 27.3	9.1 18.2	74.2 69.7	
<u>ECONOMIC CONCERNs</u>			1 (N: 44) 2 (N: 44)	20.5 20.5	22.7 22.7	13.6 13.6	9.1 9.1	0.0 11.4	11.4 6.8	22.7 15.9	31.8 27.3	50.1 54.5	9.1 18.2	74.2 69.7	
28. A continuing widening of the material gap between the have and have-not political systems.	Report of World Bank's committee in 1969 reflected the present urgency. The "haves" will get more.	The material gap in Alberta continues to close. In the world aspect it is narrowing due to the efforts of the "emerging" nations.	1 (N: 45) 2 (N: 42)	2.2 0.0	8.9 7.1	8.9 14.3	2.2 7.1	17.8 21.4	* * 57.8 40.5	2.2 9.5	37.8 26.2	44.4 47.6	17.8 26.2	73.3 66.7	
29. Rejection of government "welfare" and "world-aid" policies in favour of private administration of such programs.	Welfare to many is degrading. The callous official "dole" schemes will be rejected. Increased technology will result in more people needing assistance.	Evolutionary trend is towards greater governmental participation in man's affairs. Moving towards a socialist/democratic world.	1 (N: 45) 2 (N: 42)	8.9 13.6	8.9 18.2	15.6 6.8	20.0 2.3	17.8 25.0	28.9 20.5	0.0 13.6	31.1 25.0	57.8 50.0	11.1 25.0	73.3 66.7	
30. Disappearance of the sharp distinction between the private sector and the public sector.	Sharp distinction disappeared some time ago. Inability of private sector to control inflation & eliminate poverty.	Democracy on this continent must provide for private enterprise as competition for public services, e.g. CTV.	1 (N: 45) 2 (N: 44)	8.9 13.6	8.9 18.2	15.6 6.8	20.0 2.3	17.8 25.0	28.9 20.5	0.0 13.6	31.1 25.0	57.8 50.0	11.1 25.0	73.3 66.7	
31. Controlled productivity-non-productivity.	Blacks and Indians have lived in controlled non-productivity for years. Welfare schemes now doing same to urban poor and aged. People want to work less and have more; therefore control is necessary.	Will never be a problem. Everyone wants more and will not submit to controls over productivity.	1 (N: 42) 2 (N: 42)	4.8 7.1	7.1 16.7	26.2 21.4	7.1 2.4	28.6 11.9	11.9 14.3	14.3 26.2	16.7 11.9	47.6 59.5	35.7 28.6	60.3 61.1	
<u>MEDICAL-SOCIAL CONCERNs</u>			1 (N: 47) 2 (N: 45)	*	40.4 28.9	36.2 24.4	0.0 6.7	6.4 6.7	0.0 6.7	4.3 4.4	12.8 22.2	40.4 22.2	29.8 48.9	66.7 64.4	
32. Increasing misuse of all varieties of drugs as more become available and prohibitive measures of control continue to prove inadequate.	There is presently misuse by all segments of society. Being unlawful <i>per se</i> is meaningless. No effective control is possible.	Will not be increasing misuse. Will not be more serious than drinking or gambling in the past.	1 (N: 39) 2 (N: 43)	2.6 9.3	10.3 9.3	10.3 7.0	7.7 9.3	10.3 25.6	23.1 23.3	35.9 16.3	12.8 14.0	33.3 37.2	53.8 48.8	60.0 55.0	
33. Medical technology contributing to an increase in hereditary diseases by permitting "carriers" to survive and produce off-spring.	Prolonging life beyond normal termination is already practised in our hospitals.	Totally unbelievable. Inhuman, non-Christian. Inheritance patterns of many of the diseases require several generations for study.	1 (N: 44) 2 (N: 43)	6.8 11.6	9.1 16.3	13.6 16.3	18.2 11.6	22.7 16.3	6.8 16.3	22.7 11.6	22.7 14.0	40.9 39.5	36.4 46.5	62.1 55.9	
34. Deciding when to remove life-supporting aid from a terminal patient to make scarce facilities available to others.	As vital now as it may be later. Interpreted socially: we allocate medical care inefficiently and inequitably.	Scarce facilities are fast disappearing. A hypothetical situation, frivolous to consider.	1 (N: 41) 2 (N: 42)	2.4 4.8	0.0 4.8	14.6 11.9	17.1 9.5	*	24.4 40.5	31.7 19.0	9.8 9.5	14.6 11.9	29.3 33.3	56.1 54.8	52.8 52.4
35. The loss of natural selective pressures of differential reproduction through biomedical engineering.	Seems to be what Trudeau is advocating. Zoologists are presently advocating this.	A breakthrough is possible if enough research is done.	1 (N: 41) 2 (N: 42)	2.4 4.8	0.0 4.8	14.6 11.9	17.1 9.5	*	24.4 40.5	31.7 19.0	9.8 9.5	14.6 11.9	29.3 33.3	56.1 54.8	52.8 52.4



Table 142 (continued)

Statement	Reason for prediction		Prediction no.	Probable date of occurrence							Competence			Total competence %	
	Early	Late/Never		70-71	72-75	76-80	81-85	Later	Never	Perpetual problem	High	Med	Low		
36. The attempt to approach immortality by surgical replacement of parts.	Current examples: organ transplants, pace makers, artificial parts for organs.	Extending life <u>per se</u> will never be a problem. Has always been a fanciful desire.	1 (N: 40) 2 (N: 44)	7.5 9.1	5.0 11.4	100 15.9	125 2.3	22.5 18.2	32.5 31.8	10.0 11.4	10.0 9.1	47.5 43.2	42.5 47.7	55.9 53.8	
37. The replacement of family physicians with technical and computer facilities for screening purposes.	The passing of the family physician is to be lamented.	The personal contact will always be essential, because most ills do not show and are caused by pressure.	1 (N: 45) 2 (N: 44)	2.2 4.5	8.9 15.9	28 20.5	9.8 11.4	28.9 22.7	17.8 22.7	4.4 2.3	20.0 18.2	48.9 43.2	28.9 38.6	62.2 59.8	
<u>LAW AND ORDER</u>			1 (N: 45) 2 (N: 44)	*	26.7 25.0	24.4 25.0	6.7 9.1	0.0 4.5	2.2 4.5	8.9 6.8	31.1 25.0	32.6 31.8	58.7 50.0	78.7 18.2	76.3 71.2
38. Inadequate understanding of human behaviour by many of those charged with the responsibility of law enforcement.	Police Science courses are planned for some Colleges in Alberta. Hardening attitude in U.S. to use of law and order to "resolve" race problems.	The populace at large will not recognize this as a problem. Society is unwilling to support the costs of quality law enforcement.	1 (N: 42) 2 (N: 43)	*	16.7 11.6	11.9 11.6	11.9 4.7	4.8 4.7	2.4 7.0	14.3 27.9	38.1 32.6	21.4 25.6	71.4 55.8	7.1 18.6	71.4 69.0
<u>HUMANISTIC CONCERN</u>			1 (N: 44) 2 (N: 44)	*	11.4 13.6	9.1 13.6	22.7 18.2	15.9 18.2	20.5 13.6	6.8 13.6	13.6 9.1	20.5 18.2	45.5 54.5	34.1 27.3	62.1 63.6
40. Conflict arising from the search for a mechanism of attaining a population-steady state.	The break-through into public consciousness of problems involving population and pollution began in Alberta in 1969. See #41 (Early).	The statement is anti-Christian. No such thing as a population-steady state. Chief opposition, the Church, has already broken down.	1 (N: 44) 2 (N: 43)	*	11.4 11.6	9.1 11.6	22.7 14.0	15.9 11.6	20.5 27.9	6.8 18.6	13.6 4.7	20.5 20.9	45.5 48.8	34.1 30.2	65.2 63.5
41. Adjusting to a change from expanding to static world populations.	The inadequacy of present legal, political, fiscal, and economic concepts in handling this problem is now becoming apparent. See #40 (Early).	No evidence of a static population in view. Famine is not likely to be a factor.	1 (N: 44) 2 (N: 43)	*	4.5 11.6	6.8 11.6	13.6 14.0	22.7 11.6	34.1 27.9	11.4 18.6	6.8 4.7	27.3 20.9	40.9 48.8	31.8 30.2	65.2 63.5
42. Concern for quality in life as opposed to quantity in life.	Youthful confusion and drop-out rate; increases in incidence of mental disorders, alcoholism, drug use. \$5 billion spent on leisure in U.S. in 1969-70.	North American affluent society will always value quantity over quality. This is human nature.	1 (N: 46) 2 (N: 44)	*	13.0 18.2	17.4 6.8	15.2 15.9	10.9 6.8	8.7 25.0	6.5 4.5	28.3 22.7	32.6 22.7	54.3 68.2	13.0 29.1	73.2 71.2
43. Confusion over accountability to self, peers, charges, and society.	Family incoherency and mass media have produced this. Present problem: As the usefulness of authority is challenged, confusion over accountability arises.	No reasons submitted.	1 (N: 41) 2 (N: 42)	*	24.4 28.6	22.0 16.7	12.2 14.3	2.4 0.0	4.9 9.5	0.0 2.4	34.1 28.6	33.3 28.6	47.6 54.8	19.0 16.7	73.2 70.6
44. Need to make people aware -- to the point of concern and participation -- of major human problems (war, poverty, overpopulation, destruction of the natural environment, exploitation of man by man, racial prejudice).	Recent studies emphasize the necessity for immediate concern if man is to survive. Present trend for people to speak out.	Never in history has man really been concerned with major human problems. He is unlikely to change.	1 (N: 46) 2 (N: 44)	*	39.1 38.6	13.0 15.9	8.7 13.6	4.3 9.1	0.0 2.3	2.2 2.3	32.6 18.2	45.7 22.7	45.7 70.5	4.3 6.8	77.5 72.0
45. Respect for diverse human genotypes and avoidance of sociological "straitjacketing".	Sociologists seem very concerned with categorizing populations, with making sure we all conform. More people are rebelling against this approach and insisting on individuality.	Prejudice is a human characteristic and is not really a problem. Socialism is a spreading disease which does not recognize human genotypes.	1 (N: 41) 2 (N: 43)	*	7.3 18.6	12.2 11.6	9.8 16.3	14.6 4.7	19.5 18.6	9.8 7.0	26.8 23.3	39.0 19.0	41.5 57.1	19.5 23.8	73.2 63.6
<u>COMMUNICATION SYSTEMS AND SKILLS</u>			1 (N: 47) 2 (N: 44)	*	25.5 22.7	14.9 25.0	23.4 6.8	6.4 2.3	8.5 13.6	6.4 11.4	14.9 18.2	29.8 29.5	51.1 45.5	19.1 25.0	70.2 68.2
46. Individuals being deprived of independent assessment of information through commercial control of mass media, editorializing by mass media, and the development of data banks.	In Alberta commercially owned media are controlled by politically powerful money interests. People are truly tired of having mass media do their thinking for them.	The people affected will make the mass-produced opinions their own and not recognize this as a problem.	1 (N: 43) 2 (N: 43)	*	23.3 27.9	11.6 9.3	20.9 14.0	7.0 7.0	9.3 7.0	16.3 23.3	11.6 11.6	22.7 27.9	61.4 53.5	15.9 18.6	70.5 69.8
47. The individual's communication skills being threatened by professional dominance of communication.	Pseudo-professional advertisers and communications personnel <u>create</u> needs in the public. The public is growing increasingly sceptical of this kind of thing.	The public will never have the skills to recognize this as a problem. Critical expression is an inherent human quality and to an extent is independent of the media.	1 (N: 43) 2 (N: 43)	*	23.3 27.9	11.6 9.3	20.9 14.0	7.0 7.0	9.3 7.0	16.3 23.3	11.6 11.6	22.7 27.9	61.4 53.5	15.9 18.6	70.5 69.8



Table 42 (continued)

Statement	Reason for prediction		Prediction no.	Probable date of occurrence						Competence			Total competence		
	Early	Late/Never		70-71	72-75	76-80	81-85	Later	Never	Perpetual problem	High	Med	Low		
48. Need for specific training in the ability to communicate accurately,	Many errors are made due to faulty communication. Stress is being placed on this at all levels now.	No reasons submitted.	1 (N: 45) 2 (N: 45)	* 40.0 31.2	15.6 24.4	4.4 6.7	4.4 4.4	4.4	0.0	31.1	55.6 40.0	33.3 40.0	11.1 20.0	81.5 73.3	
49. Inept professional use of technological media as a vehicle of social service.	This situation already exists. Lack of information about the advantages and potential of technological media.	Our society is so conditioned to technological half-solutions that most people will never see this as a problem.	1 (N: 42) 2 (N: 43)	* 31.0 27.9	19.0 16.3	16.7 18.6	2.4 0.0	4.8	7.1	19.0	19.0 14.0	61.9 62.8	19.0 23.3	66.6 63.5	
50. Increased "noise" and decreased content in media.	Has been the trend for the past five years. The media assume that the average person cannot comprehend intelligent content, e.g. C.R.T.C. findings.	Public tolerance encourages this. Will never be a problem for most people. New generation demands more content, not less. Media will be forced to change.	1 (N: 42) 2 (N: 43)	* 35.7 34.9	26.2 18.6	9.5 14.0	2.4 4.7	0.0	11.9	14.3	42.9 23.3	47.6 58.1	9.5 18.6	77.8 68.2	
51. Technological reduction of "meaningful" leisure/creative media.	Surveys indicate that people prefer entertainment which is not necessarily creative. See T.V.	Leisure will become more meaningful.	1 (N: 40) 2 (N: 43)	17.5 18.6	20.0 23.3	15.0 16.3	0.0 0.0	2.5	22.5	22.5	29.3 11.6	36.6 69.8	34.1 18.6	66.7 64.3	
<u>CULTURAL, RELIGIOUS, RACIAL AND SECULAR CONCERNs</u>															
52. Finding a means of developing in citizens a concept of rightness and goodness in lieu of traditional norms rooted in traditional religious systems which are no longer credible to modern man.	Beliefs with a basis in faith rather than reason cut across educational training and appear irrelevant. That biological and theological data reinforce each other in ethics is one of the first results of the present day philosophical revolution.	Studies of student values show loss of religious tradition and inadequate acquisition of humanistic values. People require change -- will never accept a static concept. Traditional religious systems will continue.	1 (N: 45) 2 (N: 44)	13.3 18.2	8.9 15.9	* 11.4	22.2 11.4	8.9 15.9	6.7	13.3	26.7	33.3 15.9	51.1 59.1	15.6 25.0	72.6 63.6
53. Conflict between sacred-traditional system of values and secular-hedonistic-humanistic system of values resulting in a breakdown of a public system of higher education.	Younger generation no longer seems to accept traditional systems or methods. Certain groups and religions establishing their own educational institutions to ensure that proper values are taught.	Conflicts of value systems should lead to synthesis, not breakdown. Philosophical revolution has begun; there is no long term conflict.	1 (N: 44) 2 (N: 43)	11.4 9.3	15.9 11.6	* 14.0	15.9 11.6	6.8 7.0	27.3 25.6	15.9 20.9	27.3 14.0	45.5 60.5	27.3 25.6	66.7 62.8	
54. Sectarian education inhibiting the growth of racial and religious tolerance.	Tolerance needs light and discussion to grow. See: The "bible belt" and Alberta in particular.	Sectarian extremism will be replaced by scientifically based ethical values, leading to racial and religious tolerance.	1 (N: 43) 2 (N: 43)	18.6 16.3	7.0 0.0	9.3 9.3	2.3 4.7	4.7 23.3	30.2 25.6	27.9 20.9	23.3 14.0	53.5 48.8	23.3 34.9	66.7 58.1	
55. Revival of interest in religion and a renewal of belief in doctrines.	Swing of the pendulum away from materialistic over emphasis.	Interest will never revive. Science is the new religion. Two aspects should not be in the same statement.	1 (N: 41) 2 (N: 44)	2.4 0.0	7.3 9.1	12.2 20.3	4.9 2.3	*	19.5 27.3	34.1 13.6	19.5 13.6	31.9 15.9	43.9 59.1	24.4 25.0	69.1 63.6
56. Alienation of adult native people because of inadequate and irrelevant educational programs, and because of lack of native involvement in developing and administering such programs.	Adult native people now recognize disparities and discrimination. This recognition and its results will become more apparent as more leaders arise among them. It is now well underway.	No reasons submitted.	1 (N: 44) 2 (N: 45)	* 45.5 44.4	29.5 31.1	6.8 11.1	4.5 2.2	0.0	2.3	11.4	27.3 26.7	61.4 46.7	11.4 26.7	72.0 66.7	
57. Reduction of the number of viable evolutionary alternatives to Western/non-Western society.	Societies are coming together and showing more similarity. Domination of U.S. corporate business.	There can be no reduction in alternatives unless there is a catastrophic reduction in the number of units of variation, i.e., imaginative man.	1 (N: 39) 2 (N: 41)	15.4 9.8	5.1 9.8	* 14.6	7.7 9.8	10.3 17.1	25.6 26.8	20.5 12.2	7.7 14.6	41.0 56.1	51.3 29.3	52.1 61.8	
<u>PHILOSOPHICAL CONCERNs</u>															
58. Unwarranted faith in technology, experts, and statistics.	Faith in computers. Technical skills have surpassed the value basis for judgment now, e.g., prolonging life, abusing environment	The present cynicism and scepticism about statistics and experts suggests that this will not be a problem.	1 (N: 42) 2 (N: 44)	26.2 25.0	11.9 13.6	0.0 15.9	0.0 4.5	7.1 4.5	19.0 20.5	14.3 15.9	23.8 22.7	61.9 63.6	14.3 13.6	69.8 69.7	
59. Establishing a philosophic basis of further social, cultural, economic, and medical change.	Ferment of the past ten years. Without this we will decline cf. Roman Empire which never established such a base.	Such a basis will be out of date almost as soon as it is promulgated. Society will eventually come to the brink of disaster.	1 (N: 42) 2 (N: 44)	9.5 4.5	11.9 11.4	* 15.9	16.7 18.2	14.3 20.5	0.0 2.3	28.6 27.3	14.3 15.9	71.4 47.7	14.3 36.4	66.7 59.8	
60. Replacement of pseudo-scientific positivism with a new philosophy which re-integrates the sciences and humanities, derives ethical principles and the rule of law from biological data, and recognizes human diversity as being due to the interaction of both genetics and culture.	The collapse of the ethical basis of criminal law has already been proved through genetic research. The legal profession cannot resist this much longer. Revolt against egalitarian educational systems may take a little longer	This "goal" for education is simply an extension of humanistic thinking which has no place for the integrating role of religion. Biology is not the main source of ethical principles. Man is biology plus culture plus "x" factors.	1 (N: 42) 2 (N: 42)	7.1 4.8	2.4 14.3	14.3 14.3	7.7 9.5	19.0 21.4	26.2 19.0	16.7 16.7	19.0 16.7	52.4 47.6	20.6 35.7	63.5 60.3	



Table 42 (continued)

Statement	Reason for prediction		Prediction no.	Probable date of occurrence							Competence			Total competence %	
	Early	Late/Never		70-71	72-75	76-80	81-85	Later	Never	Perpetual problem	High	Med	Low		
61. Political parties and religious bodies losing their old orientation (left-right; high-low) and re-interpreting their activities in the light of the new (see #60) philosophy.	Everyone is getting more concerned with people. Political parties and politicians are opportunistic.	This suggests the highly improbable attainment of absolute homogeneity. Such groups have always changed orientations over time.	1 (N: 43) 2 (N: 44)	9.3 9.1	4.7 20.5	9.3 9.1	20.9 13.6	23.3 15.9	16.3 22.7	16.3 9.1	20.9 29.5	55.8 52.3	23.3 63.6	65.9	
62. Marx, Hitler, and Russell as prophets being replaced by John Donne, Kropotkin, and Trotter.	Donne, Kropotkin, and Trotter outline between them the scientific, emotional, and religious approaches to the compassionate society. Views of Marx and Hitler lead to racism. Russell is the antithesis of the biologist, Trotter.	Marx, particularly, is becoming more frequently used in social science. The historical forefathers of Marx, Hitler, and Russell are becoming better known. Hegelian thought (and avoidance of action) is becoming more frequent.	1 (N: 35) 2 (N: 40)	0.0 2.5	2.9 7.5	5.7 2.5	8.6 12.5	25.7 27.5	48.6 32.5	8.6 15.0	14.3 10.0	34.3 32.5	54.3 57.5	55.2 50.8	
<u>ADULT EDUCATION</u>															
63. Highly specialized training in the normal period of education making it necessary for adult education to assume increasing responsibility for general education programs.	Increased demands of employers for specialized skills. Academic and vocational streaming in high school. Increase in adult enrolments in general interest courses.	Trend is the reverse. With changing technology specialized training will be undertaken in adult years, general education in earlier years.	1 (N: 46) 2 (N: 44)	17.4 14.0	23.9 14.0	21.7 16.3	10.9 7.0	4.3 11.6	10.9 27.9	10.9 9.3	47.8 31.8	39.1 56.8	13.0 11.4	78.3 73.5	
64. Need for programs on how to live in both urban and rural society.	Current evidence: concern for urban encounter groups, and revolutionary tactics growing among the rural population.	Foundations should be laid in junior schools rather than in adult education. A person needs first to live as an individual.	1 (N: 46) 2 (N: 43)	28.3 20.9	26.1 34.9	17.4 11.6	0.0 2.3	4.3 9.3	6.5 11.6	17.4 9.3	47.8 37.2	39.1 48.8	13.0 14.0	78.3 74.4	
65. Inadequately trained teachers producing alienation in adults being taught.	Students drop-out from boredom. Too many teachers fail to recognize student needs.	Teachers will never be that badly trained. Adults do not need spoon-feeding.	1 (N: 43) 2 (N: 42)	* * 23.8	25.6 23.8	4.7 4.8	2.3 0.0	0.0 2.4	7.0 14.3	27.9 31.0	39.5 40.5	39.5 42.9	18.6 16.7	72.1 74.6	
66. Need for special programs for those who have less than "normal" academic backgrounds and who need to develop their employability potential.	Growth in demand for academic upgrading, e.g., Indian adult upgrading on Blood and Peigan Reserves. Rapid technological advance of the past ten years.	Important but not vital.	1 (N: 45) 2 (N: 42)	* * 45.2	51.1 33.3	20.0 9.5	11.1 0.0	0.0 0.0	2.2 0.0	15.6 11.9	46.7 42.9	46.7 54.8	6.7 2.4	80.0 80.2	
67. Need for many adults to be re-trained and to up-date their earlier education and skills.	Skills and trades becoming obsolete as a result of rapid technological change.	Most "education and skills" is irrelevant to contemporary living. Re-training cannot solve any of the existing or contemplated socio-economic problems.	1 (N: 47) 2 (N: 44)	*	42.6 43.2	19.1 29.5	10.0 9.1	0.0 0.0	2.1 2.3	25.5 15.9	53.2 43.2	40.4 50.0	6.4 6.8	82.3 78.8	
<u>GENERAL EDUCATION</u>															
68. The selection of course content based on needs of people, versus the selection of course content as basic to further study of the discipline.	Current evidence: increasing demand by students for relevant courses; rapidity of change in or disintegration of traditional disciplines.	Must be considered separately and not as one necessarily superseding the other.	1 (N: 47) 2 (N: 43)	*	25.5 18.6	21.3 30.2	27.7 16.3	4.3 4.7	0.0 2.3	0.0 4.7	21.3 23.3	38.3 32.6	51.1 60.5	10.6 7.0	75.9 75.2
69. Introduction of humanities into technical programs resulting in vocationally ill-prepared and therefore dissatisfied workers.	Humanities taught from the standpoint of the teacher's values and not related to the work or "real" culture of the student.	Humanities do not produce a poorer quality of technical worker. Technical programs never do fully prepare all students. Dissatisfaction stems from other causes.	1 (N: 44) 2 (N: 44)	*	13.6 4.5	6.8 13.6	13.6 2.3	*	4.5 9.1	43.2 45.5	15.9 11.4	34.1 25.0	45.5 56.8	20.5 18.2	71.2 68.9
70. Need for basic education rather than preparation for specific jobs.	We are already in the period when training in specific skills rapidly becomes obsolete.	As society becomes more technical, the need for specialization will increase. A majority of people will not agree that a general education is required.	1 (N: 44) 2 (N: 43)	*	22.7 30.2	18.2 27.9	18.2 9.3	6.8 7.0	4.5 2.3	27.3 9.3	40.0 14.0	44.4 32.6	15.6 58.1	76.5 9.3	74.4
71. Need to educate people to know and live in the north.	This is the last frontier and entails a way of life very different from that of the south. People need to be prepared to live there.	Education will not encourage this type of living. Does not require special education.	1 (N: 42) 2 (N: 44)	*	14.3 9.1	14.3 22.7	14.3 18.2	16.7 6.8	16.7 13.6	9.5 25.0	14.3 4.5	27.3 15.9	40.9 54.5	31.8 29.5	68.3 62.1



Table 42 (continued)

Statement	Reason for prediction		Prediction no.	Probable date of occurrence							Competence			Total competence %	
	Early	Late/Never		70-71	72-75	76-80	81-85	Later	Never	Perpetual problem	High	Med	Low		
<u>ADMINISTRATION, CO-ORDINATION, FINANCING OF EDUCATION</u>															
72. Need to develop new administrative structures, flexible methods of admission and appraisal of students, and suitable operational procedures.	Administrators prefer to preserve old structures rather than experiment with new. Students, staff, and the public are aware of deficiencies in administrative structures.	No need for immediate changes. The present trend in the direction of flexibility should be obvious by 1976-80.	1 (N: 43) 2 (N: 43)	* 39.5 30.2	30.2 32.6	16.3 16.3	0.0 2.3	0.0 0.0	14.0 16.3	51.2 23.3	37.2 60.5	11.6 16.3	79.8 68.9		
73. Need to co-ordinate programs and institutions with each other and with industry, government departments, and community organizations.	Too much overlapping and duplication is already apparent. People must be mobile within and between institutions.	Has always been a problem. Complete and total centralization is abhorrent in its implications.	1 (N: 44) 2 (N: 43)	* 31.8 34.9	27.3 25.6	13.6 4.7	4.5 2.3	0.0 2.3	20.5 30.2	45.5 37.2	47.7 55.8	6.8 7.0	79.5 76.7		
74. Making education accountable and able to justify its demands for scarce resources.	Urgent demands of other social sectors. Growing tax burden. Tendency to treat education as a privilege rather than a right.	Education should not be accountable to society simply because society pays for it. It must justify itself, e.g., by producing creative persons	1 (N: 43) 2 (N: 44)	* 30.2 27.3	23.3 25.0	14.0 11.4	2.3 2.3	0.0 9.1	27.9 11.4	41.9 13.6	44.2 38.6	14.0 13.6	76.0 75.0		
<u>OTHER EDUCATIONAL CONCERNs</u>															
75. Increasing student unrest and desire for more active participation in making programs and institutions relevant to their needs.	Berkeley, Columbia, Rochdale -- all have focussed on this area. Students feel that middle class values are not what they believe in for their future lives.	A more meaningful dialogue will be established as those who sympathize with activists reach positions of responsibility within and without universities.	1 (N: 45) 2 (N: 44)	* 53.3 29.5	33.3 38.6	2.2 13.6	0.0 0.0	0.0 4.5	0.0 2.3	11.1 11.4	31.1 27.3	62.2 61.4	6.7 11.4	74.8 72.0	
76. Difficulty of coping with expanding knowledge and information retrieval and storage.	Computerized search procedures have a very low retrieval or precision value. Retrieval is probably already on a chance basis.	In this highly technical age, storage and retrieval difficulties are not likely to occur.	1 (N: 45) 2 (N: 44)	* 40.0 15.9	31.1 25.0	6.7 18.2	4.4 4.5	0.0 15.9	2.2 11.4	15.6 9.1	44.4 27.3	51.1 52.3	2.2 20.5	79.3 68.9	
77. Difficulty of obtaining teachers and counsellors who are knowledgeable in their specialties and sensitive to the needs of students and society.	Current state of student unrest. Educators "sort" more than they teach. We have subject experts rather than effective teachers.	Inexperienced teachers in specialist fields. Time will be required for the training of teachers.	1 (N: 43) 2 (N: 43)	* 41.9	7.0 14.0	4.7 14.0	0.0 4.7	0.0 0.0	0.0 2.3	46.5 23.3	44.2 34.9	51.2 48.8	4.7 11.6	79.8 71.3	
78. Technology versus traditional teacher roles.	Increased use of T.V. in schools. Increased use of technology is necessary to reach large numbers of students. Teachers don't want to be redundant; therefore, their unions urge low student/teacher ratios.	The hidebound teacher will recognize the problem by 1980; but the bulk of the people affected -- the students -- will not recognize the problem ever.	1 (N: 41) 2 (N: 42)	*	26.8 21.4	14.6 31.0	12.2 2.4	4.9 7.1	4.9 7.1	24.4 14.3	26.8 28.6	54.8 54.8	16.7 16.7	71.5 70.6	
79. Anti-business attitudes taught as policy by academics, leading to glorification of intentions without regard for competence.	Attitude of higher learning institutes tends to be socialistic and anti-business. Teachers tend to be impractical because of lack of experience in the business world.	Educational institutions support business and industry. Do not foresee anything being taught as policy by academics. Academics are establishment oriented and job conscious.	1 (N: 40) 2 (N: 42)	*	22.5 14.3	0.0 14.3	2.5 11.9	0.0 2.4	45.0 38.1	22.5 9.5	32.5 28.6	47.5 52.4	20.0 19.0	70.8 69.8	
80. Public protest against students spending more time in educational institutions than in any vocation.	Many people are "fed up" with professional students cum professional agitators. Part of the rebellion against spiralling education costs, with education appearing to lead to destructiveness.	Longer educational processes are a counter to underemployment of the young. Not likely to be significant protest.	1 (N: 42) 2 (N: 43)	4.8 16.3	14.3 18.6	16.7 9.3	*	7.1 2.3	9.5 11.6	35.7 27.9	11.9 14.0	28.6 25.6	50.0 65.1	19.0 19.3	68.3 72.1

<sup>a</sup> Data from the first questionnaire<sup>b</sup> Data from the third questionnaire<sup>c</sup> Prediction made on the second questionnaire<sup>d</sup> Prediction made on the fourth questionnaire<sup>e</sup> Indicates the time period by which 50 percent of the respondents had made their predictions (perpetual problem included in 1970-71)<sup>f</sup> Respondents' total degree of competence/respondents' total possible degree of competence x 100



## Appendix E

PERCENTAGE FREQUENCY DISTRIBUTION OF RESPONSES  
RELATING TO THE CONTENTS OF EACH STATEMENT



Table 43

Percentage Frequency Distribution of Responses  
Relating to the Contents of Each Statement

State- ment	N	Response category			State- ment	N	Response category		
		Desir- able	Indiff- erent	Undesir- able			Desir- able	Indiff- erent	Undesir- able
a 1	47	91.5	6.4	2.1	41	44	65.9	22.7	11.4
2	46	30.4	13.0	56.5	42	47	83.0	12.8	4.3
3	45	53.3	26.7	20.0	43	43	30.2	27.9	41.9
4	45	33.3	6.7	60.0	44	46	89.1	8.7	2.2
5	45	17.8	13.3	68.9	45	45	77.8	15.6	6.7
6	44	29.5	11.4	59.1	46	47	27.7	6.4	66.0
7	45	22.2	26.7	51.1	47	46	19.6	13.0	67.4
8	45	17.8	26.7	55.6	48	47	85.1	10.6	4.3
9	46	21.7	13.0	65.2	49	45	13.3	17.8	68.9
10	47	42.6	25.5	31.9	50	44	18.2	11.4	70.5
11	46	21.7	21.7	56.5	51	42	21.4	16.7	61.9
12	46	21.7	6.5	71.7	52	46	76.1	6.5	17.4
13	45	35.6	6.7	57.8	53	45	31.1	22.2	46.7
14	46	78.3	13.0	8.7	54	45	20.0	6.7	73.3
15	46	19.6	8.7	71.7	55	43	44.2	30.2	25.6
16	45	22.2	20.0	57.8	56	43	27.9	9.3	62.8
17	46	21.7	17.4	60.9	57	41	19.5	41.5	39.0
18	44	40.9	20.5	38.6	58	45	20.0	22.2	57.8
19	45	22.2	20.0	57.8	59	45	80.0	15.6	4.4
20	47	25.5	4.3	70.2	60	45	57.8	22.2	20.0
21	46	50.0	32.6	17.4	61	44	72.7	15.9	11.4
22	45	11.1	8.9	80.0	62	38	23.7	57.9	18.4
23	42	26.2	23.8	50.0	63	47	70.2	8.5	21.3
24	45	48.9	22.2	28.9	64	46	71.7	23.9	4.3
25	45	57.8	22.2	20.0	65	44	29.5	13.6	56.8
26	47	66.0	6.4	27.7	66	45	95.6	2.2	2.2
27	45	13.3	11.1	75.6	67	47	93.6	6.4	0.0
28	45	24.4	13.3	62.2	68	46	73.9	19.6	6.5
29	46	17.4	21.7	60.9	69	44	34.1	25.0	40.9
30	45	51.1	17.8	31.1	70	47	74.5	19.1	6.4
31	43	48.8	25.6	25.6	71	45	61.4	36.4	2.3
32	47	25.5	6.4	68.1	72	44	95.5	4.5	0.0
33	42	16.7	33.3	50.0	73	46	87.0	8.7	4.3
34	43	41.9	34.9	23.3	74	45	66.7	17.8	15.6
35	44	25.0	27.3	47.7	75	46	67.4	19.6	13.0
36	43	16.7	38.1	45.2	76	46	45.7	13.0	41.3
37	45	24.4	31.1	44.4	77	44	56.8	9.1	34.1
38	46	28.3	2.2	69.6	78	41	39.0	29.3	31.7
39	44	29.5	13.6	56.8	79	42	11.9	28.6	59.5
40	45	42.2	22.2	35.6	80	43	30.2	25.6	44.2

<sup>a</sup>

Statement numbers agree with statement numbers in Table 42, Appendix D



Appendix F

DISTRIBUTION OF STATEMENTS ACCORDING TO CATEGORIES CONTAINING  
FIFTY PERCENT OR MORE OF THE RESPONSES RELATING  
TO THE CONTENTS OF EACH STATEMENT



Table 44

Distribution of Statements According to Categories Containing  
 Fifty Percent or More of the Responses Relating  
 to the Contents of Each Statement

Statements for which desirable frequency $\geq 50\%$	Statements for which indifferent frequency $\geq 50\%$	Statements for which undesirable frequency $\geq 50\%$	Statements for which no frequency $\geq 50\%$
1 <sup>a</sup>	62	2	10
3		4	18
14		5	24
21		6	31
25		7	34
26		8	35
30		9	36
41		11	37
42		12	40
44		13	43
45		15	53
48		16	55
52		17	57
59		19	69
60		20	76
61		22	78
63		23	80
64		27	
66		28	
67		29	
68		32	
70		33	
71		38	
72		39	
73		46	
74		47	
75		49	
77		50	
		51	
		54	
		56	
		58	
		65	
		79	
Total no. of statements	28	1	34
			17

<sup>a</sup> Statement numbers agree with statement numbers in Table 42, Appendix D



## Appendix G

### TWELVE GOALS OF GENERAL EDUCATION



## TWELVE GOALS OF GENERAL EDUCATION

In a study of general education in California Junior Colleges Johnson (1952:21-22) enumerated twelve goals of general education:

The general education program aims to help each student increase his competence in

1. Exercising the privileges and responsibilities of democratic citizenship.

2. Developing a set of good sound moral and spiritual values by which he guides his life.

3. Expressing his thoughts clearly in speaking and writing and in reading and listening with understanding.

4. Using the basic mathematical and mechanical skills necessary in everyday life.

5. Using methods of critical thinking for the solution of problems and for the discrimination among values.

6. Understanding his cultural heritage so that he may gain a perspective of his time and place in the world.

7. Understanding his interaction with his biological and physical environment so that he may better adjust to and improve that environment.

8. Maintaining good mental and physical health for himself, his family, and his community.

9. Developing a balanced personal and social adjustment.

10. Sharing in the development of a satisfactory home and family life.

11. Achieving a satisfactory vocational adjustment.

12. Taking part in some form of satisfying creative activity and in appreciating the creative activities of others.









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